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THE VALUE OF PENICILLIN IN SURGERY*

BY

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Penicillin is the nearest approach to the ideal antiseptic yet discovered, and its value can scarcely be overestimated. But it has limitations, quite apart from the physical and chemical properties which hamper its preparation and administration. Only certain organisms are susceptible to it (although, fortunately, the sensitive group includes the majority of organisms of particular interest to the surgeon), and even these may not be inhibited or destroyed unless the drug is properly used and the appropriate ancillary treatments given. Good surgery is still essential, and the lavish expenditure of any chemotherapeutic agent will not purchase an indulgence for therapeutic sins.

Penicillin has now been tested in most of the likely and many of the unlikely conditions, and the literature abounds with records of its successes in small groups of selected cases, usually treated without contrasts or controls. Reports on large groups of surgical cases are almost confined to battle casualties because, until just over a year ago, the bulk of the world production of penicillin was devoted to the treatment of the Armed Forces of the Allies. The luckless casualties provided a grim but instructive surgical surfeit, and many Army surgeons did not fail to utilize their unexampled opportunities. The figures quoted below are obtained from such sources.

Value of Penicillin in Prophylaxis

Penicillin, being more active and much safer in use, is a better prophylactic agent than the sulphonamides against the common pyogenic and anaerobic infections, but this theoretical superiority is unlikely to be exploited generally until simple oral methods of administration are perfected. Its use as aerosols in operating theatres or wards to prevent air-borne infections will be impossible until supplies become ample, although it may be employed more economically in the form of nose and throat sprays, as Knott and Blaikley (1946) have suggested, in an attempt to prevent infections produced by staphylococcal and streptococcal carriers. The penicillin pastilles recommended by MacGregor and Long (1944), and the tooth pastes or powders devised by Powell and Colquhoun (1945), may also be employed to combat the development of buccal, faucial, and dental infections; but these methods have more medical than surgical applications, and need not be further discussed.

So far, penicillin has been given large-scale prophylactic trials only in battle casualties. All the dangerous pathogens commonly found in war wounds are penicillin-sensitive, and if penicillin can be maintained in contact with them in a suitable concentration for a sufficient period of time, these organisms should be inhibited or destroyed by the combined effects of the drug and the normal body defence mechanisms. This knowledge was exploited through all stages of the campaign in N.W. Europe. Casualties were given parenteral or local penicillin, or both, at the most forward surgical levels as soon as practicable after wounding; and once a course of penicillin was started it was continued, no matter how or where the patient went, until a surgeon had decided that the treatment could be terminated or until the patient had been evacuated to an E.M.S. hospital in the U.K. The preparation and administration of penicillin solutions and powders under active service conditions were not easy, and it was feared that complications due to penicillin-insensitive contaminants might be frequent. Actually, such contretemps were astonishingly few considering that at least 100,000 soldiers received penicillin treatment (Mitchell, 1945), and, apart from some impure batches which produced needless pain and irritation, penicillin justified in every way the remarkable claims made for it by Fleming, Florey, Cairns, and others. Reports from all sources contained comments on the marked absence of severe sepsis and the reduced incidence of all wound infections, and, although better facilities, better surgery, better communications, and other factors deserved credit, few doubted that penicillin was the dominant factor in the control of infection—formerly the greatest single problem in war surgery.

Bacteriological Evidence.—The clinical improvement was unquestioned, and confirmation was provided by bacteriological investigations (Porritt and Mitchell, 1946). In the Middle East campaigns "no growth" reports on the first wound swabs taken after admission of casualties to hospital were most uncommon. Thus in a series of 100 consecutive personal cases investigated in No. 1 Orthopaedic Centre, M.E.F., in 1942, a positive culture was obtained in every case. In the N.W. European (B.L.A.) campaigns of 1944–5, "no-growth" reports on wound cultures were common, and staphylococcal, and particularly streptococcal, infections were relatively uncommon (Porritt and Mitchell, 1946). Thus 268 out of 560 wound swabs taken from casualties who had nearly all received prophylactic penicillin gave "no growth" on culture. The findings are contrasted in Table I.

TABLE I

Organisms Isolated	M.E.F. Casualties	B.L.A. Casualties
Streptococci	68% (50% haem.)	5% (3% haem.; 2% anhaem.)
Staphylococci	58% (46% aureus)	25% (11% coag. +; 5% coag. −; 9% no details given)
Clostridia	28%	2%
Pyocyaneus	16%	—
Coliforms	6%	10%
Proteus	14%	—
"No growth"	—	48%

* A lecture delivered at the Royal College of Surgeons, London, on Oct. 29, 1946.

In both the above-quoted series the infections were usually mixed, so the percentages merely give an indication of the incidence of the various organisms in the wounds. And it must be recorded that penicillinase was not employed in many of the cultures, so it is probable that a number of false negatives were obtained. Nevertheless, these laboratory findings confirmed the clinical impression that the great majority of the wounds were cleaner than were those commonly seen in former campaigns. Incidentally it is interesting to recall that in the war of 1914–18 haemolytic streptococci were the predominant pathogens (Fleming and Porteous, 1919).

Factors Influencing Results.—Clearly it would be very important to discover the reason for the improvement, and after consideration of all possible factors influencing the occurrence of infection in wounds there is no doubt that the widespread prophylactic use of *both* parenteral and local penicillin at the most forward surgical levels in the N.W. European campaigns was the principal factor in producing the improved results. Time does not permit discussion of all these factors—nature of wounds and missiles, degree of contamination, terrain, climate, time–distance factors, resuscitation, anaesthesia, primary surgery, pre- and post-operative care, etc.—which do influence the state of wounds; but two common misconceptions must be corrected: (1) that the surgeons of 21 Army Group (the combined British and Canadian Armies constituting the so-called B.L.A.) were all specially experienced; and (2) that the time–distance factors were much more favourable in Europe than elsewhere.

1. The majority of the surgeons, anaesthetists, and transfusion officers who landed in Normandy in June, 1944, had no previous experience of field surgery, and while their work was generally excellent, it was no better, for example, than that achieved by the Eighth Army surgeons. Yet their results, as judged by the condition of the wounds, were much better.

2. Some have assumed that more favourable time–distance factors in N.W. Europe explained all the improvements, it being ignored or forgotten that men wounded in the same theatre in 1940, even before the final disastrous days, had shown no comparable absence of sepsis. Two time–distance factors require consideration: (*a*) the interval between wounding and primary surgery; and (*b*) the interval between the primary surgery performed in forward units and the secondary surgery done in hospitals. These in turn are related to important subsidiary factors such as rest, frequency of dressings, etc.

The first interval is the more important in respect of prophylaxis, and, although this may surprise many, it was not significantly different in the N. African, Italian, or N.W. European theatres, being 12 to 14 hours on an average.

The second interval was often prolonged in the desert, especially in the earlier phases, and this probably explained the almost universal occurrence of moderate to severe wound sepsis. Exhausting journeys, lack of rest, inadequate fluids, frequent pain, and the irrepressible tendency to change dressings in each medical unit on the line of evacuation, all led to inevitable infection. But this state of affairs did not always prevail. At Alamein, where the greatest desert battle was fought, the front remained static for weeks on end. At that time casualties were evacuated to hospitals more easily and rapidly than was often possible during the campaigns in N.W. Europe, and the Medical Services were as efficient as anywhere during the war, yet the wounds were all infected to a greater rather than a lesser degree when the patients reached hospital.

Air transport was not used in evacuating the wounded from the battlefield to the forward surgical units a few miles behind and therefore did not influence the more important time–distance factor from the prophylactic point of view—that between wounding and primary surgery. It did influence the period between primary and secondary surgery, however, as from the time of Alamein in 1942 onwards air-ambulances were used increasingly between forward and base medical units. It was possible to obtain information about this interval from special surgical reports submitted by many of the surgeons in 21 Army Group hospitals. Thus, of 2,153 men who had wound sutures performed, 1,290 were operated upon within 1 to 7 days of having been wounded, and 863 were operated upon 8 days or more after they had been wounded. It was the general rule to suture nearly every wound within 1 to 2 days after the patient had been admitted, so it is obvious that about 40% of the casualties in N.W. Europe did not reach a hospital where secondary closure was possible until about a week or more after they had been wounded. From late 1942 onwards the average intervals in other theatres were not greater.

Penicillin v. Sulphonamides in Prophylaxis.—Many surgeons are still undecided about the relative value of sulphonamides and penicillin in prophylaxis, and assume that because the former are of great therapeutic value in many conditions they must also be very effective prophylactic agents. The evidence, however, favours the view that they usually prevent spreading or generalized infections from wounds, but have no appreciable effect on the incidence or severity of local infections. This was well exemplified in the later desert campaigns. By then the administration of prophylactic sulphanilamide was extremely efficient and, although the spreading infections commonly seen in the pre-sulphonamide phase were comparatively rare, the great majority of the wounds showed evidences of active local infection. In the N.W. European campaign both penicillin and sulphonamides were used and there was a remarkable change for the better in the condition of the wounds. As the one completely new factor was the prophylactic exploitation of penicillin, it must be accorded most credit for the dramatic improvement.

An attempt was made to discover whether penicillin alone was as effective in prophylaxis as penicillin plus sulphonamides. Once the former was freely available it seemed to be unnecessary to give both if penicillin alone was equally effective, especially as the sulphonamides occasionally produced annoying or even dangerous complications. Casualties with comparable wounds were divided into two groups in forward surgical units. Except for the drugs employed these men were all treated alike, but one group received only the routine prophylactic doses of parenteral and/or local penicillin, while men in the other group were given both penicillin and sulphonamides. The wounds of these patients were carefully compared when they were first examined in base hospitals. In the assessment of infection four categories were used: 0 (none); + (slight); ++ (moderate); and +++ (severe). The results compiled from the reports of 17 surgeons are given in Table II.

TABLE II

Agents	Total Cases	Degree of Infection				Percentage 0 and +
		0	+	++	+++	
Penicillin only (parenteral and/or local)	497	298	165	28	6	93·1
Penicillin (parenteral and/or local) plus oral sulphonamides	480	275	159	37	9	90·4
Sulphonamides only (oral and usually local)	157	74	41	25	17	73·2
Totals	1,134	647	365	90	32	88·8

The number of severe infections was highest in the "sulphonamide only" group, but most of these were in prisoner patients, and it would be misleading to compare them directly with the others. Study of the other groups shows that the men who received penicillin only did not suffer from the absence of a sulphonamide. Although the difference between the results is small, it is significant that a higher proportion of the men in the "penicillin only" group received parenteral penicillin, suggesting (a surmise confirmed by personal investigations) that this group contained a higher proportion of men with severe wounds, these being the ones more likely to receive parenteral penicillin. Thus the interesting fact emerges that in this series of about 1,000 cases the men with the severer wounds received more prophylactic parenteral penicillin and had less infection. The moral of this and similar observations in many other cases is obvious: in order to secure maximum protection for those with severe open injuries penicillin should be used *both* parenterally and locally.

Anaerobic Myositis.—The value of penicillin in prophylaxis, and possibly in therapy, is further confirmed by studying the figures for anaerobic myositis. The high incidence of this serious infection in the war of 1914–18 and in the disastrous struggle in 1940 gave rise to inevitable fears of a similar high rate when fighting was renewed over the same ground. The penicillin memorandum issued for the guidance of medical officers just before the invasion of Normandy in 1944 drew particular attention to the "gas-gangrene prone" type of case and placed these patients in the highest priority for penicillin prophylaxis. The recommendations were interpreted generously, and the rate of penicillin expenditure was high, but the policy was justified by the results. In the desert campaigns MacLennan (1944) calculated that the incidence of gas-gangrene was 3.4 per 1,000 and in Tunisia 6.7 per 1,000. Jeffrey and Thomson (1944) estimated that the rate in Italy was not less than 10 per 1,000. It is unknown whether the above figures include cases among prisoners. In N.W. Europe the incidence in Allied troops (Porritt and Mitchell, 1945) was 1.5 per 1,000, and, although no exact figures are available, it was very much higher in enemy troops. Incidentally, it is worth noting that sulphonamides were used freely by the Germans both in prophylaxis and in therapy. The death rate in cases in N.W. Europe was also exceptionally favourable, being 21.5% in Allied troops—the lowest recorded mortality in any large series of cases. The actual figures for the entire campaign in N.W. Europe are given in Table III.

TABLE III.—*Anaerobic Myositis Cases treated by 21 Army Group Surgeons, D Day (June 6, 1944) to VE Day (May 8, 1945)*

Categories	Cases	Deaths	Percentage Mortality
Allied troops	251	54	21·5
Prisoners	133	59	45·1

The existence of many variables in wounds sustained and treated in the field renders the exact assessment of their individual importance difficult or impossible. But the one really new factor in the N.W. European campaigns was the widespread prophylactic use of penicillin, both parenterally and locally, and in any reckoning it must be accorded a good deal of the credit for the diminished incidence and improved results.

I have deliberately focused attention upon the prophylactic value of penicillin because to date its therapeutic applications have secured almost all the publicity. Penicillin may produce brilliant results in many established and hitherto mortal infections, but it would be far better for the patients, if less spectacular, to prevent the infections or modify their virulence. Herein lies the greatest promise of penicillin in surgery—to abolish or reduce the incidence and severity of pyogenic and anaerobic infections by the judicious combination of surgery and penicillin.

Prophylactic Administration.—In minor wounds local applications are usually adequate. The wound should be dusted with penicillin powder at the first examination, and this procedure may be repeated if necessary, but unnecessary dressings or interference should be avoided. In war wounds we used 5,000 Oxford units of penicillin per gramme, the diluent being sulphonamides or powdered plasma. For the average civilian case, which is treated sooner and is less heavily contaminated, a smaller concentration of penicillin should be adequate. In more severe wounds, particularly in those with much tissue damage, associated vascular lesions, retained foreign bodies, or open bone and joint injuries, penicillin should be used *both* parenterally and locally as soon as practicable after the accident—e.g., on admission to the casualty department of a hospital. For prophylaxis intermittent injections are most often used, and, depending on circumstances, dosages between 15,000 and 100,000 units per injection have been employed; the smaller doses are given three-hourly and the larger every five to six hours. The lower dosages should be sufficient in civilian practice. With the increasing availability of penicillin in slow-release vehicles, such as the oil and beeswax suspensions, these may be employed to reduce the number of injections and give more prolonged protection; they have the disadvantage that they are difficult to inject. Reliable and economical oral methods of administration have not yet been perfected. When they are they will become the method of choice except in those patients who have been exposed to great infective hazards or who show evidence of developing a fulminating infection. If the patient is admitted to hospital continuous methods of administration may be instituted from the start and the prophylactic administration may then merge into the therapeutic; the average daily dosage by this method is 100,000 to 120,000 units, and most practitioners will be familiar with the various forms of apparatus that may be employed.

Penicillin administration should be started at the first available opportunity and should be continued until the satisfactory state of the patient's local and general conditions shows that the danger of infection is past.

In patients with heavily contaminated wounds the initial prophylactic dose may be boosted up to 100,000 units, or, if continuous methods of administration are employed, 300,000 units may be given during the first 24 hours. The larger doses are specially indicated if there has been any delay in instituting treatment or if there are associated vascular lesions. The higher blood titre thereby obtained may produce an adequate penicillin level in partially devitalized or devascularized tissues, but it is re-emphasized that surgery is still the main bulwark in these cases both in prevention and treatment. Unless there is some specific indication for their use, prophylactic sulphonamides may be withheld if penicillin is being administered.

Value of Penicillin in Therapy

An enormous volume of evidence has been published regarding the therapeutic value of penicillin in a wide variety of conditions. This being so, there is no need to add wood to the pile of well-established facts, and in any case one could not even summarize all the evidence within an hour. It will be more profitable to discuss an experiment (21 *Army Group Memo*, 1944) which was carried out by Army surgeons in an attempt to discover the relative value of different agents in eliminating or controlling wound infection. Surgeons were asked to treat alternate cases:

(*a*) with penicillin and (*b*) with a contrast agent. To avoid complicating the issue, casualties with associated visceral, bony, or articular injuries were excluded. Apart from this, patients treated were consecutive and unselected, and they had wounds of the soft tissues of all grades of severity. The idea was that each surgeon would choose what he regarded as the best alternative to penicillin, and it was emphasized that, apart from the chemotherapeutic agent employed, every other controllable factor, such as surgery, diet, rest, etc., should be of equal quality, with no preferential treatment for any case.

Before describing the results it may be of interest to explain why this investigation was initiated. In the earlier stages of the war surgeons were frustrated by the prevalence of sepsis, and they soon discovered that secondary sutures, grafts, and plastic procedures, however desirable in theory, were not safe in practice. Despite various attempts to evolve improved methods of treatment this state of affairs persisted substantially unchanged until the pioneer work of Florey and Cairns (1943) and their collaborators showed in N. Africa that many wounds could be closed safely under the protective mantle of penicillin. By the time of the invasion of Normandy the much greater supplies of penicillin available permitted its widespread employment as a prophylactic agent. As a result at least 9 out of 10 wounds were clinically clean when they were first examined at base hospital level, and secondary closures became the commonest operations performed. They were carried out regularly and with impunity not only on clean wounds but on many which, in pre-penicillin days, would have been regarded as quite unsuitable for suture. This notable advance conferred untold benefits in the prevention of pain, in providing better functional and cosmetic results, in avoiding prolonged suppuration with consequent visceral damage, and in shortening convalescence. As Porritt, Debenham, and Ross (1945) commented: "The results achieved led to a saving of man-power, a reduction in wound complications, and an economy in hospitalization, in supplies of drugs and equipment, in surgeons' and nurses' time which it is quite impossible either to compute or to appreciate fully."

All this is now generally known, but when the medical plans were being made for the invasion of Normandy penicillin was merely a name to most surgeons. Preliminary reports about it were very encouraging, but many surgeons held that the case in its favour was unproved, since the earliest casualties treated had received preferential treatment—e.g, they had been retained in forward hospitals for longer periods than comparable casualties not treated with penicillin, and they had benefited from unusually specialized medical attention. It was therefore decided that the relative value of penicillin could not be assessed accurately until it was tried out on absolutely equal terms against other popular agents. This was the background behind the decision to initiate the investigation mentioned above.

The results proved the superiority of penicillin beyond reasonable doubt as Tables IV and V reveal.

TABLE IV.—*Results of Wound Sutures in 4,432 Cases*

Agents Used	Total Cases	Grade I		Grade II		Grade III		Percentage Grades I and II
		No.	%	No.	%	No.	%	
Penicillin; local applications only	2,359	1,881	79·73	348	14·75	130	5·52	94·48
Penicillin; local and parenteral	1,485	1,221	82·22	185	12·46	79	5·32	94·68
Penicillin; parentera only	107	92	85·98	12	11·21	3	2·81	97·19
Sulphonamides; local and systemic	141	88	62·41	30	21·27	23	16·32	83·68
Sulphathiazole-proflavine mixtures—local	183	99	54·09	51	27·88	33	18·03	81·97
Nil	157	114	72·61	25	15·92	18	11·47	88·53

The results may be shown more simply by contrasting the penicillin cases with all the others.

TABLE V

Agents Used	Total Cases	Grade I		Grade II		Grade III		Percentage Grades I and II
		No.	%	No.	%	No.	%	
Penicillin	3,951	3,194	80·84	545	13·79	212	5·37	94·63
Others	481	301	62·57	106	22·04	74	15·39	84·61

The wounds were assessed on a uniform standard:

Grade I (Success).—Wound healed and completely dry at the end of 14 days. This period was selected as sutures were often performed under some tension and then the stitches were not removed until the eleventh or twelfth day.

Grade II (Partial Success).—Wound incompletely healed at the end of 14 days (slight moistness, small gaps, mild stitch suppuration, etc.), but healed and completely dry at the end of 21 days.

Grade III (Failure).—Wound incompletely healed at the end of 21 days.

Anyone with experience would regard Grades I and II as successes for the delayed suture of war wounds, so both were included when computing the percentages in the final column. As originally planned the investigation should have provided results in almost equal groups of cases. In fact, they were unequal, and the reason was simple. Most surgeons became so impressed at a relatively early stage by the superiority of penicillin that, for the sake of the wounded, they abandoned the use of contrast agents. Despite this a clear answer was obtained to the problem under investigation. In this large series of cases treated by many different surgeons penicillin proved itself superior to all other agents tested. This result is more evident if the highest standard (Grade I) is regarded as the criterion of success, and the superiority of penicillin over the other agents becomes less evident if the standard is lowered and both Grades I and II are regarded as successes.

The results in the group of patients whose wounds were sutured without any adjuvant agent are interesting, but they cannot be compared strictly with the others as this group contained only minor cases. It represents what can be accomplished by unaided surgery in small clean wounds: and it must be remembered that the wounds were clean when the patients reached hospital, because the men had probably received prophylactic penicillin in some forward surgical unit. On the other hand, the penicillin groups—and particularly those treated with parenteral penicillin—contained almost all the major wounds, yet these showed the highest standard of success. In the light of this knowledge the penicillin results appear to be still bettter.

Analyses of other features connected with these cases supplied the same answer—that penicillin had no serious rival—and, if time and space permitted, figures could be quoted relating to other injuries and diseases which all support the belief that penicillin is of supreme value. Time and space, however, are finite in medical if not in mathematical affairs, and perhaps the facts and figures I have given, together with those already known to you, will strengthen your belief that Fleming, by an inspired vision, discovered what had seemed until then a biological impossibility—the almost perfect antiseptic.

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A REVIEW OF THE DIETETIC FACTORS IN LIVER DISEASE

BY

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II.—THE APPLICATION OF NUTRITIONAL PRINCIPLES IN TREATMENT*

Acute Necrosis of the Liver

Acute necrosis of the liver is an anatomical diagnosis which cannot be made with certainty without biopsy or necropsy. Usually, however, we must rely on the indirect evidence of acute hepatic insufficiency. Jaundice is intense and the serum bilirubin rises to 20 mg. per 100 ml. or higher. The patient is critically ill with delirium, stupor, coma, and upgoing toes. There are ascites, oedema, purpura, and occult blood in the stools. If we confine the terms "acute necrosis" and "acute hepatic insufficiency" to such cases —and I believe we shall make no therapeutic advance until we establish rigid criteria—we shall find ourselves dealing with a hepatic disorder which is uncommon and which has a mortality of 50 to 100%. From a sample analysis of death certificates carried out for the Jaundice Committee of the Medical Research Council by Dr. W. H. Bradley and Dr. Percy Stocks in 1944 (unpublished report), it appeared that there were approximately 400 deaths a year from acute hepatic insufficiency, of which only about 8% were toxic jaundice, whereas the greater part were probably due to the viruses of infective hepatitis, homologous serum jaundice, and post-arsphenamine jaundice. The average number of deaths from notifiable toxic jaundice during the years 1940–4 was fewer than six a year. I stress the rarity of fatal toxic jaundice in man in view of the fact that so much of our present information has been derived from toxic jaundice in animals.

The difficulties of carrying out therapeutic trials on a disease which is uncommon and hard to diagnose are great. Much of the literature on the subject is worthless, recording isolated successes, changes of fashion, and the surprising capacity of the organism, even in sickness, to withstand onslaughts on its integrity. This state of things should improve as a result of the careful collection and study of morbidity and mortality statistics which is occurring in several parts of this country. More is to be hoped from animal experiments, which are still curiously incomplete in the matter of treatment. The drawbacks to animal experiment are the dissimilarity of animals and man, and the failure to transmit infective hepatitis to animals. Another possibility, which it is to be hoped we shall be spared, is the occurrence of epidemics of infective hepatitis with a mortality of the order of 15%, such as have lately appeared in Denmark and Switzerland.

It will be simplest to begin by discussing orthodox therapy with glucose. The untreated hepatectomized animal always dies of hypoglycaemia, and life may be prolonged for many hours by the administration of glucose. Dextrose therapy in diseases of the liver in man has been reviewed by Althausen (1933), but perhaps the most convincing data are those of Chester Jones (1936). He collected 56 cases of acute hepatic insufficiency from the records of the Massachusetts General Hospital and showed that the mortality had fallen from 95 to 63% over a period during which glucose therapy had been made more intensive. In the final period an attempt had been made to give the patient 450 to 500 g. of carbohydrate by mouth, usually combined with intravenous therapy, with solutions of glucose ranging from 5 to 25%.

There is no magic in glucose, whether it is given by mouth or intravenously, but there are, nevertheless, circumstances in which the intravenous injection of glucose may be of special value. There is normally a careful adjustment between the level of blood sugar and the release of sugar into the circulation by the liver. When the liver is damaged it may require a much higher concentration of blood sugar than normal to inhibit the formation of hepatic sugar. Such levels may not be attainable by oral feeding, and the intravenous infusion of dextrose may be essential. The fact that the hyperglycaemia so produced may lead to glycosuria is of no moment, and insulin should not be used as a rule or it will defeat the very purpose for which the glucose was given (Soskin and Hyman, 1939). A small number of human cases of acute hepatitis was treated by Minot and Cutler (1929) on a meat-free diet rich in carbohydrate, accompanied by oral administration of calcium lactate, but the work does not seem to have gone very far. Nevertheless, it has become standard practice in acute hepatic insufficiency to administer calcium intravenously, usually in the form of 10 ml. of 10% calcium gluconate, though few who carry out this procedure have read Lamson's (1930) advice on the need for extreme care and slowness.

The remarkable success of a high intake of certain proteins and protein derivatives in the prevention of acute necrosis in animals and in the treatment of cirrhosis in man has naturally given rise to the hope that these substances might be of value in acute hepatic insufficiency. Many theoretical objections can be raised against this new heterodoxy. The metabolism of proteins and amino-acids demands work from the liver, and it is a cardinal principle of therapeutics to rest a damaged organ. There is abundant evidence that meat and meat extracts may be positively harmful to animals with acute or repeated damage to the liver from carbon tetrachloride. The patient with acute hepatic insufficiency is liable to extrarenal azotaemia and uraemia, though opinion is divided whether this should indicate or contraindicate the administration of protein (Leitis, 1946; Zondek, 1946). In some cases of severe damage to the liver a state of acute renal failure develops which is known as the hepato-renal syndrome and which has been attributed to toxic derivatives of protein (Helwig and Schutz, 1932; Reich, 1941; Trueta *et al.*, 1946).

In this atmosphere of dubiety the ordinary clinician will do well, in the treatment of acute hepatic insufficiency, to concentrate on the relief of shock and the restoration of the normal internal milieu of the organism by fluids and glucose. Milk protein appears to be harmless, and milk should therefore form part of the fluid intake, though it is unlikely that more than 30 to 40 g. of protein will be supplied in this way. The therapeutic value and application of nitrogenous materials such as choline, amino-acids, protein hydrolysates, and plasma still await demonstration in

* The second of two University of London Lectures in Medicine given at the Westminster Hospital Medical School on Oct. 29, 1946. The first lecture appeared in last week's issue.

animal experiments and in controlled trials in man, and are the province of the research worker. No one knows yet whether they are helpful or harmful.

It would nevertheless be cowardly to leave the subject here without reviewing such data as are available. It is true that there is no evidence, even in animals, that proteins or amino-acids influence hepatic necrosis favourably once it has been established, though there is good evidence that choline accelerates recovery from fatty change. On the other side of the slate the research worker would note that 90% of deaths from infective hepatitis occur relatively late, when the disease has lasted more than 20 days (Lucké, 1944). The necrosis of experimental carbon tetrachloride poisoning may be repeatedly repaired, perhaps up to 40 times, but in the end there is a final phase of exhaustion when the rat is no longer able to restore the liver to normal (Cameron and Karunaratne, 1936). This suggests that patients with necrosis may run out of critical materials for regeneration of liver tissue. Regenerative ability doubtless varies from individual to individual owing to differences in hereditary and acquired characteristics, of which the previous state of nutrition is the most obvious. Death in acute necrosis may therefore be due either to temporary hepatic insufficiency or to exhaustion of the recuperative power. In our orthodox treatment we concentrate on tiding the patient over the period of hepatic insufficiency. In the future we may learn to fortify the recuperative power.

Acute Infective Hepatitis

Far and away the commonest disease of the liver in this country is infective hepatitis, or catarrhal jaundice. During the war acute hepatitis was made notifiable in Region IV, which had a population of over two and a half millions. Notification has been in force over two complete years, 1944 and 1945. The number of cases decreased from 3,559 in 1944 to 1,626 in 1945, and the incidence rate fell from 1.3 per 1,000 to 0.6 per 1,000. Voluntary notifications showed that the incidence had been higher in 1943 than in 1944. Practically all the cases notified were acute infective hepatitis. From these and other data we can assume that there were somewhere between 25,000 and 50,000 cases of infective hepatitis a year in Great Britain during the war. The mortality of infective hepatitis is about 0.2 to 0.4%, that of homologous serum jaundice and post-arsphenamine jaundice is probably higher. Owing to its low mortality and its prevalence in children, infective hepatitis is not usually regarded very seriously. During the war, however, epidemics occurred amongst our troops overseas which came near to disabling whole armies and air forces. Moreover, there was a high incidence of homologous serum jaundice and post-arsenical jaundice. These last two forms of jaundice are due to a virus which is similar to but probably not identical with the virus of infective hepatitis, and I shall consider the treatment of all three without discriminating between them.

The therapeutic problem in infective hepatitis is not mortality but the long period of disability, which averages 40 days. Various experiments have been carried out with diets and dietary principles, but no specific effect on the disease has been discovered. There is a general impression that strict rest is more important than strict diet. All that has been done—and this is undoubtedly gain—is to prevent patients being made miserable or unwell by unnecessary dietetic restrictions. Two observations can be offered in partial explanation of the failure of dietetic therapy in infective hepatitis. The main onslaught of the disease has usually occurred by the time the patient comes under treatment, and it is unusual to encounter the metabolic disturbances which arise in severe injuries and infections.

Pollock (1945) has shown that bromsulphthalein retention, biliuria, and a qualitative change in serum bilirubin may be present in the pre-icteric stage of infective hepatitis several days before the onset of jaundice. There is also a pre-icteric rise in phosphatase (Higgins and O'Brien, 1946). The earliest biopsies show gross changes in the liver, and Dible, McMichael, and Sherlock (1943), in their account of aspiration biopsy studies, say that the liver inflammation probably begins with the prodromal symptoms which are so often regarded as gastro-intestinal in origin. With the onset of clinical jaundice all the functions of the liver are found to be disturbed—carbohydrate metabolism, biliary excretion, hippuric acid and protein synthesis. Recovery usually occurs in the sequence of falling bilirubin, recovery of carbohydrate metabolism, normal hippuric acid excretion, normal level of albumin and globulin. I have already described carbohydrate as the great source of energy for the metabolic activities of the liver; and the impairment of carbohydrate metabolism, coupled with the restricted food intake, may be the cardinal event in the general depression of liver function.

Interest has recently been revived in the great loss of nitrogen which sometimes occurs in acute illnesses and after operations, accidents, and burns (Cuthbertson, 1944). The reason for this nitrogen loss, which reaches its maximum about the middle of the second week after the incident, is not known. It is not mere shortage of calories, and there is a suggestion that body protein is broken down to supply scarce substances for repair. Not only is weight lost during this phase but the healing of wounds, burns, and fractures may be retarded. Peters and his group (Peters, 1945) have made a particularly interesting study of the biochemical lesion in experimental burns. They found that there were heavy losses of nitrogen on the basal diet which could be largely prevented by a high-protein diet. They suggested that the losses were due to the raiding of tissue stores of nitrogen for one or more essential amino-acids, and showed that these could be prevented by the addition of 1% methionine to the basal diet, but not by cystine. The administration of high-protein, high-calorie diets has been recommended for general use for human convalescents (Stevenson, Whittaker, and Kark, 1946), and it is natural that similar diets should have been specifically recommended for infective hepatitis, where there is considerable cellular damage to the liver.

We have found no evidence of toxic destruction of protein in infective hepatitis. My colleagues Higgins and O'Brien (1946) found a negative nitrogen balance in three out of six of our patients, but in only one was it serious; the other three patients were in positive balance. The patients were studied as early as practicable, and it is unlikely that a negative phase was missed. Creatinuria, though frequent, was variable in degree and capricious in appearance. The evidence suggests that only occasionally is there a serious nitrogen imbalance in infective hepatitis, and in the majority of cases the negative balance which is apparent in the early stages is a reflection of the duration of the nausea rather than the severity of the hepatitis as judged by the bilirubinaemia. Similar rather negative conclusions were drawn by Higgins and O'Brien from a study of the plasma proteins in our patients. All the patients with serum bilirubin over 5 mg. per 100 ml. showed a slight to moderate fall in serum albumin and a slight rise in globulin. In cases followed from the pre-icteric stage the first event was the fall in plasma albumin. Albumin quickly returns to normal when the bilirubinaemia declines, but globulin may be much slower. The fall in serum albumin is certainly not entirely due to nausea, for it continued in patients who ate well and had a high protein intake, and in others who

had additional amino-acid therapy. It is probably related to a failure of manufacture of plasma proteins due to impairment of the liver and not to a shortage of raw materials.

The technique of therapeutic trials in infective hepatitis is now more or less standardized. We cannot use the death rate, and must rely on the duration of illness, the occurrence of relapses, and the frequency of permanent damage. The disease varies greatly in severity, but satisfactory criteria can be established for duration of biliuria, anorexia, hepatic enlargement, etc., comparability of cases, and the requisite number of cases and controls. Using such a technique Darmady (1945) found no difference between a high-calorie, high-protein, high-vitamin diet and a classical low-fat diet. Hardwick (1945) found no difference in patients allowed 180 and 50 g. of protein a day. Wilson, Pollock, and Harris (1946) found no difference in groups of patients on 202 and 68 g. of fat a day.

Results with dietary supplements are likewise disappointing. Higgins *et al.* (1945) and Wilson, Pollock, and Harris (1945) observed no effect from methionine, 5 g. a day by mouth, and Hoagland and Shank (1946) were equally unsuccessful with methionine, 5 g. a day intravenously. Rennie (personal communication, 1945) had no success with cystine, 15 g. a day by mouth. On the other hand Peters and his co-workers (Peters, Thompson, *et. al.*, 1945) observed significant improvement of results with cysteine, 2 g. daily by mouth, and with methionine, 2.5 to 5 g. daily by mouth, and Wilson, Pollock, and Harris (1946) observed significant improvement with cysteine, 5 g. daily by mouth. The latter group of workers noted that the improved figures were largely explained by a smaller number of exacerbations or relapses in the treated series, and in both series the difference between the treated cases and the controls was not great. Viswanathan (1945) claimed improvement from intravenous injections of protein hydrolysate. Richardson and Suffern (1945) and Hoagland and Shank (1946) had no success with choline, 1.5 to 5.0 g. daily by mouth. Lenz (1944) had no success with insulin and glucose, and Gordon (1944) none with insulin, glucose, and vitamin C. Hoagland and Shank (1946) also had no success with intravenous liver extract.

These therapeutic trials have not escaped criticism. The diets which were being compared were not always isocaloric, but that is chiefly because a low-fat diet is unappetizing. It is objected that the intake of protein was so low that the methionine or cysteine could do little more than compensate for this. Protein intakes in our patients varied at different times from 34 to 120 g. a day, with an average of 80 to 90 g. The high-protein diets used in jaundice are not very high in comparison with the 300 g. a day forced in by Taylor (1944), but anything more than 150 g. a day is a *tour de force*. Finally it is calculated that the curative dose in man would be 20 g. of choline a day for two or three weeks, or 20 to 60 g. of methionine (Barclay *et al.*, 1945). Such large amounts are impracticable of ingestion and would require intravenous administration. This technique would be justifiable as part of a planned research on the treatment of acute necrosis of the liver, but surely not for so benign and common a disease as infective hepatitis.

My practical advice (Witts, 1945) on the treatment of infective hepatitis is that neither the fat nor the protein should be too low. A low-fat diet is unappetizing and commonly implies undernutrition. A very low protein diet is undesirable in a patient who has to regenerate shattered columns of liver cells. "Clinical experience has confirmed Bollmann's (1943) conclusions from the treatment of animals whose livers had been damaged by carbon tetrachloride, that 'the caloric value of the diet should be as high as possible, and the ratio of carbohydrate and protein in the diet seems to be of less importance than the total caloric intake furnished by these substances.' The basic rule in the treatment of acute hepatitis is that the intake of fluid and food should be adequate to protect the patient from dehydration, acidosis, and tissue breakdown from malnutrition. The damaged liver is coping simultaneously with two tasks—the day-to-day needs of metabolism and the repair of its own substance—and it must be neither starved nor overburdened with material. A light diet with plenty of milk from which the top layer of cream has been removed fills the bill admirably. Self-selected diets also work out well, and it seems the patient will take no harm if he eats what he likes, whether he behaves like Jack Spratt or his wife. The real problem is when he does not want to eat at all. Turner *et al.* (1944) believe that if the patient were given an infusion of dextrose for every meal avoided or vomited some disasters might be obviated."

Treatment of Cirrhosis

Cirrhosis of the liver is not a common disease in Great Britain, for the number of deaths from this cause has fallen below 1,000 a year. The average duration of life of our Oxford patients is about two years after coming under treatment, so that the total number of cases being treated in the country at any one time is probably about 2,000. The small number of cases makes it difficult to carry out therapeutic trials, for in a chronic disease like cirrhosis the results are best assessed by the determination of survival rates, one year, two years, three years, etc., after the patients come under observation, and this technique necessitates a large number of cases. Moreover, we ought, if possible, to distinguish between alcoholic and non-alcoholic cases, between portal cirrhosis and postnecrotic fibrosis, and this is not always easy, even after post-mortem examination. British figures are not comparable with American figures owing to the much lower incidence of alcoholism in this country. Dr. A. R. Kelsall (personal communication, 1946) has reviewed the 48 cases of cirrhosis which have been admitted to the Radcliffe Infirmary in the last six years, and not more than two could be attributed to alcohol. The non-alcoholic cirrhoses have a closer affinity with postnecrotic fibrosis than with fatty infiltration or portal cirrhosis, and their course is more protracted and variable than that of alcoholic cirrhosis.

The changing character of cirrhosis of the liver must be borne in mind when we use past experience, such as the excellent data of Ratnoff and Patek (1942), to assess the value of new therapeutic procedures. These authors have also provided figures for the usual length of survival after the onset of ascites, jaundice, or haematemesis. There is great variability, and a small number of patients survive five years or more after these alarming symptoms. The chief desideratum, therefore, in any experiment on the treatment of cirrhosis is a large and unbiased sample of cases, which can be divided into treated and control groups and from which results of statistical significance can be deduced. In the study of individuals, chemical observations on the blood, in particular the level of serum proteins, afford objective evidence of the course of events.

Hurst (1946) has written of a precirrhotic condition of the liver, and on theoretical grounds we should expect fatty infiltration to do better than cirrhosis, but this can hardly be diagnosed clinically without biopsy. A fatty liver may be expected to be a large liver, but it is all too easy to confuse a large liver with a hard liver, and the determination of the size of the liver is a more difficult feat than many people have realized. Ravdin and co-workers (1943) proved by

biopsy that approximately 30% of patients with long-standing gall-stone disease had abnormally large amounts of lipoid present in the liver, and they showed that this could be reduced by a diet of 74% carbohydrate, 20% protein, and 6% fat, in which bananas and casein figured prominently.

It has long been taught that milk is the ideal diet for cirrhosis (Rolleston and McNee, 1929). Beginning with this observation, we may omit description of the groping advance through regimens of low fat, high carbohydrate, adequate calories and vitamins, and high protein, and skip at one bound to the impressive studies of Morison (1946). Morison treated three groups of cases of cirrhosis. There were about 20 patients in each group, and about half of each group had ascites. The first group was given a high-carbohydrate diet and diuretics. The second group was given a high carbohydrate high protein diet, liver extract, and vitamins. The third group had a maximum intake of protein, liver extract, and vitamins, plus methionine and choline, of each 2 g. daily. In patients without ascites the intensive combined treatment in the third group resulted in the remission of all signs and symptoms in 7 out of 11, as compared with 1 out of 11 in the first (control) group. In patients with ascites complete remission occurred in 4 out of 9 of the third group, as compared with 0 out of 12 in the first. The death rate was very greatly reduced in the third group. The second group occupied an intermediate position. Morison's maximum protein regimen comprised a diet of 2,500 to 4,000 calories with 200 to 300 g. of protein, 300 to 500 g. of carbohydrate, and 50 to 100 g. of fat, and included 6 glasses of skim-milk a day.

Other workers have given much less protein than Morison, and they have not obtained such dramatic results, though their figures have shown an improvement on the past. Fleming and Snell (1942) found that among 150 patients treated with a high-carbohydrate and low-protein diet plus diuretics, they had good results in 30%, whereas among 50 patients treated with a diet including 350 to 500 g. of carbohydrate, 110 g. of protein, chiefly in the form of milk and vegetable protein, plus vitamin supplements, the results were good in 44%. Beams (1946) treated 20 patients on a regimen similar to Morison's second group, giving them in addition 30 to 45 g. of brewer's yeast, and choline and cystine, of each 1.5 to 3 g. a day. He found that 12 of the 20 patients whose livers were not enlarged gave no response, whereas 7 of the 8 who had large livers made a good recovery. Patek and Post (1941), in a statistical study which should be a model to later workers, gave a regimen similar to Morison's second group—i.e., 120 to 140 g. of protein, without thio-amino-acids or choline—and presented convincing evidence of improvement over previous treatment with high-carbohydrate and lower protein diet. Homburger (1946) studied carefully a patient who had been stabilized on a high-protein regimen. He produced evidence that substitution of the protein by an isocaloric amount of carbohydrate was attended by deterioration of the clinical and biochemical state.

In view of the many factors employed it has not been possible to isolate the effects of choline and methionine. Small series of cases treated with methionine with apparent benefit have been reported by Broun and Muether (1942), Herrmann and Rockwell (1945), and Russakoff and Blumberg (1944), the last giving up to 6 g. a day. On the other hand, Man and co-workers (1945) gave choline in large doses, 10 to 25 g. a day, to three patients with cirrhosis without demonstrable effect. Echaurren and Jorquera (1943) found the daily administration of 600 mg. of inositol helpful.

I will conclude with an account of our own efforts in the treatment of subacute and chronic hepatitis. Of the 48 cases admitted to the Radcliffe Infirmary in the last six years, 35 provided records suitable for analysis. Twenty-two of the patients were treated with high-protein diets, combined in most cases with a high carbohydrate and low fat intake and often supplemented by vitamin A and D concentrates, synthetic vitamin K, and food yeast. Protein intakes averaged 125 g. a day, but were supplemented by 30 to 60 g. of food yeast over long periods. No methionine was used, and a very small number received choline or protein hydrolysate, and then only for short periods. Thirteen patients received the classical treatment with relatively low protein diets and diuretics. The numbers are small, but there is no significant difference between the two groups, whether one compares the mortality, as in the following table, or the average duration of life in the various subdivisions. The results of dietary treatment in non-alcoholic cirrhosis are therefore discouraging.

	Alive	Dead	Total
Treated	15	7	22
Untreated	8	5	13
	23	12	35

Discussion

Disorders of the liver similar to those produced in experimental animals by dietary deficiency occur in man over wide territories of the world as a result of inadequate food supplies. The incidence of juvenile cirrhosis and primary carcinoma of the liver may well come to be regarded as indexes of nutrition. The problem must now be attacked by social engineering rather than medical science. It is merely one symptom of world pressure on food supplies, and it will not be solved by bread alone but by a completely different way of life among crowded people with high birth rates. The number of isolated dietary defects which are known to produce disease is already great, but we are still learning the simple arithmetic of nutrition and are not yet able to permute and combine the various factors so as to discover how they reinforce or neutralize one another. In the relatively simple problem of blood formation we are just beginning to realize how iron requirements may be affected by the protein and vitamin content of the diet. It therefore seems unlikely that fortification with individual principles will be as cheap or as effective as a general improvement of the diet in the prevention of hepatic diseases. Our knowledge is more likely to be useful in the selection of those natural foods which can be most expeditiously used to increase the biological value of the diet.

It is too early to assess the value of the new knowledge in the treatment of hepatic disease in the better-nourished populations of the world. Among them infective hepatitis and allied virus infections vastly predominate over all other forms of disease of the liver, and advances are more likely to come from bacteriology than from the science of nutrition. Alcoholism is a symptom of prosperity rather than austerity, and can be overcome only by a general improvement in the art of living. Nevertheless, we can still hope that appreciation of the nutritional requirements of the hepatic cell, and of the body as a whole, will enable us to improve the chances of recovery in the acute phases of hepatitis and to accelerate regeneration and repair at a later stage.

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SURGICAL ASPECTS OF ROUNDWORM DISEASE

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During my last two years as surgeon to the native population of Cyrenaica I repeatedly came across roundworm infestation either simulating surgical conditions or indicating, and in my opinion justifying, surgical intervention. The following three case reports illustrate these points.

Case 1

A boy aged 13 was seized by spastic abdominal pains and violent vomiting while at school on Dec. 12, 1945. He was brought to hospital about an hour after the onset of symptoms. Inquiry revealed that he had been suffering from similar attacks of less intensity for the last ten months. They used to come on about twice weekly at odd times, his pain apparently being localized in the epigastric region. For the same period he had shown no appetite and had been constipated.

Examination showed a thin, very pale boy. The temperature was normal, pulse 100, weak. The tongue was coated and moist. Chest, N.A.D. The abdomen was not distended, its excursions on respiration were noticeably restricted, and it was very tender, with rigidity especially in the right iliac fossa. Per rectum the pouch of Douglas was slightly tender, but no effusion was palpable. An acute appendicular attack with peritoneal irritation was assumed. Following resuscitation, the patient's general condition improved, and operation, under open-ether anaesthesia, was performed about four hours after admission.

A right pararectal incision was made. The abdominal cavity contained much turbid fluid, but no pus. Coils of small intestine presented, thronged with roundworms. The caecum was found above the level of the umbilicus. The appendix was in the retrocaecal position, and not adherent. Its tip was swollen and covered with a pink serosa. After appendicectomy the presenting loop of ileum, which was crammed with worms, was opened, and the worms (*Ascaris lumbricoides*) were removed. Masses of worms contained in other parts of the small gut were "milked" towards the opening and taken out. The longitudinal opening of the bowel-wall was closed transversely, a rubber drain was inserted into the pouch of Douglas, and the abdominal wound was sutured. Altogether 91 worms were removed. The appendix contained a faecalith the size of a cherry stone. The mucous membrane underneath was blackened with ulceration, which, however, macroscopically did not involve the deeper coatings. The post-operative course was uneventful, but the patient now and again complained of abdominal spasms. Following a course of anthelmintic treatment two weeks after operation several more worms were passed. There has been no abdominal discomfort since, and he was discharged cured.

Case 2

A little girl aged 5 was admitted to hospital on May 2, 1946, having been sent by her physician, who diagnosed appendicitis. She had had abdominal pains and retching for the preceding two days. The bowels were normal. The mother stated that she had never noticed worms in the child's stools. The temperature was 99.5° F. (37.5° C.), pulse 90. The general condition was fair. Chest, N.A.D. The abdomen was moderately distended, with tenderness and slight rigidity in the right iliac fossa. On deeper palpation intestinal coils containing longitudinal masses, like bundles of pencils, and very suggestive of roundworms, could be felt through the thin abdominal wall. Santonin and castor oil were given on three subsequent days. Masses of ascarides were passed in several motions. Immediately after treatment the abdominal pains disappeared and the temperature fell to normal. The patient was discharged cured on May 10.

Case 3

A male child aged 3 was admitted to hospital on May 27, 1946. Two days before admission he had had abdominal pains and vomiting, and his last bowel motions occurred three days previously. The temperature was 101° F. (38.3° C.), pulse 100, regular. The general condition was fair. He had abdominal facies, the tongue was coated, and respirations were of the thoracic type. The abdomen was distended, diffusely very tender, with rigidity especially in the right iliac fossa. There was free fluid on percussion. Per rectum there was no appreciable disease. On the assumption of an inflammatory intestinal condition involving the peritoneum, possibly of appendicular origin, laparotomy was performed under general open-ether anaesthesia.

A right pararectal incision was made, and a fair amount of heavily blood-stained turbid fluid of slightly faeculent odour was found on opening the abdominal cavity. The caecum and appendix did not show any abnormality. A loop of ileum belonging to the middle portion of that gut was found to be distended and intensely red; its wall was thickened with inflammatory infiltration, and on the serous surface a thread-like whitish network of swollen lymph vessels was visible. The loop involved measured about 18 in. (45 cm.), a kink forming a double-barrel-shaped incomplete intestinal obstruction about 1/2 in. (1.25 cm.) long. The wedge of mesentery belonging to it was grossly thickened to approximately 1/3 in. (0.8 cm.) in diameter, and appeared white with fibrinous-purulent infiltration. The mesenteric glands were swollen to the size of a cherry or walnut. A mass of partly curled-up worms was palpable in the diseased gut, and there was worm infestation of less intensity in other sectors of the small intestine, which, however, did not look inflamed. The coil of worms was removed through a small incision; it contained about 30 ascarides of various sizes. The near-by loops were emptied by "milking" the worms in them towards the original incision; the latter was then closed. A rubber drain was inserted, and the wound closed around it. After the operation a course of 500,000 units of penicillin was given. On May 31 the drain was shortened, only sero-sanguinolent discharge being seen. There was one normal motion. The drain was removed on June 2, and next day the general condition was satisfactory. The abdomen was soft and not distended. The patient took and retained his food, and the bowel action was satisfactory. On the 5th he vomited five small ascarides. Two days later his general condition deteriorated and he vomited worms on several occasions. Next day there was further deterioration and he vomited twelve worms during the night. On June 9 the patient died, extremely cachectic, choked with ascarides creeping in masses out of his nose and mouth.

Discussion

Diseases due to roundworms play a considerable part among the abdominal troubles of the native population in the Middle East. The clinical picture they produce may mislead the observer, unless he bears in mind their relative frequency in this part of the world as compared with Europe, and the possible variety of accompanying symptoms.

In Case 1 it did not occur to us that roundworms might be the cause of the frequent abdominal spasms. The boy's mother made no mention of their presence in the faeces, and examination led us only to the conclusion that operation was indicated because of clear signs of appendicitis with peritoneal involvement. From previous experience we concluded that the masses palpable through the thin abdominal walls in Case 2 consisted of conglomerates of roundworms; the only disquieting sign was the raised temperature, which we had not found before in roundworm disease. The success of the anthelmintic treatment confirmed our assumption, and suggested that roundworms may cause inflammatory intra-abdominal changes; and the tenderness on palpation may be significant in that connexion. The intense inflammatory changes in Case 3 reminded one of Crohn's disease. However, the presence of a big mass of roundworms in the diseased intestinal loop led me to believe that they were the aetiological agent, not only grossly damaging the bowel wall but also causing the most severe inflammatory infiltration of the related mesentery. Through an unfortunate accident we lost a swollen mesenteric gland which had been removed for histological examination during the operation. Therefore, and because the relatives refused permission to perform a post-mortem examination, no histological details are available.

Summary

Roundworm infestation may become of surgical importance not only by causing mechanical obstruction of the small gut but by producing inflammatory changes varying in degree from trivial (Case 2) to the most serious conditions (Case 3). It is usually difficult to distinguish this variety of inflammation from that of other origin. Correct diagnosis will be facilitated if in regions with prevalent roundworm infestation one will bear that possibility in mind, and go into the history of the case accordingly, using also the laboratory methods for investigation.

Surgical treatment will have to consider removal of as many worms as possible from the bowel, by "milking" them from adjoining loops towards an incision made over their biggest accumulation.

I would not hesitate even to make more incisions in cases where very extensive infestation renders removal through one opening impracticable.

At times the prognosis seems to depend to a considerable extent on the thoroughness with which the worms were removed during the operation. As medical anthelmintic measures are not advisable for at least two weeks after incision and suture of the gut, the remaining worms have ample time to grow and flood the organism. They may decide the fatal issue in cachectic individuals whose resistance through chronic roundworm infestation has already been lowered a long time before sudden developments compel them to seek medical advice.

MESENTERIC VASCULAR OCCLUSION

BY

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Mesenteric vascular occlusion is one of the less common abdominal emergencies. It is extremely difficult to diagnose and the mortality rate is high; consequently scant attention has been paid to it in most surgical works. In the past five years I have had two cases which recovered, and I feel that wider recognition and earlier treatment would do much to improve the gloomy prognosis.

The first case was recorded by Tiedmann in 1843, but it was not until fifty years later that the first resection was performed (Elliot, 1895). In 1913 Trotter presented 359 cases collected from the literature, with seven personal cases. Cokkinis (1926) published a monograph embodying an exhaustive description of mesenteric vascular occlusion and the mesenteric circulation. A series of cases was reported by MacLeod (1937) and by Atkins (1937), a case complicating labour was described by Grey Turner (1937), and two cases were recorded by Fallis (1940). A review of the literature was given by Brown (1940), and Moore (1941) followed with another, supported by eight cases. In 1943 Luke described a case treated with heparin.

Anatomy

For a proper appreciation of the possible consequences of mesenteric vascular occlusion an understanding of the anatomical arrangement of the blood supply of the intestine is necessary. The whole of the small intestine and the large intestine as far as the middle of the transverse colon are supplied by the superior mesenteric artery. This artery rises at an acute angle from the abdominal aorta behind the pancreas, crosses the third part of the duodenum, and passes forward into the root of the mesentery. It gives off ten to fifteen intestinal branches, and ends near the caecum by anastomosing with one of its own branches—the descending branch of the ileocolic artery. One of its early branches—the inferior pancreaticoduodenal artery—anastomoses with the superior pancreaticoduodenal artery, which has its origin in the gastro-duodenal branch of the coeliac axis, and this forms a collateral channel if the superior mesenteric artery is occluded. The branches of the superior mesenteric artery form numerous arterial arcades in the mesentery by anastomosing with each other. These are more numerous in the lower ileac than in the upper jejunal region. From the arcades the vasa recta, which are true end-arteries with no anastomoses, run to supply the gut-wall. The large bowel as far as the middle of the transverse colon is supplied by the ileocolic, right colic, and middle colic branches of the superior mesenteric artery, the last-mentioned of which anastomoses with the left colic branch of the inferior mesenteric artery, which is a separate branch of the abdominal aorta. This is therefore another important anastomosis should the superior mesenteric circulation be interfered with. Other anastomoses occur with the lumbar arteries in the retro-

peritoneal plexus. The venous drainage of the intestine follows closely the arrangement of the arterial supply, with the important difference that all the blood empties into the portal vein and not direct into the systemic circulation. This places the liver as a filter between the intestines and the systemic circulation, and any abnormality in the liver may have a profound effect upon the mesenteric venous circulation. Venous anastomoses between the portal and systemic veins occur in the haemorrhoidal and oesophageal plexuses and in the retroperitoneal plexus; between the para-umbilical veins and the abdominal wall; between the splenic and left renal veins; and between the left colic and capsular veins. Cokkinis (1926), in his injection experiments, found that the arterial collateral circulation, excluding the vasa recta, was considerable, and that the venous circulation was of even greater volume.

Pathology

The pathological manifestations of interference with the mesenteric circulation are various. When the circulatory obstruction develops slowly and gives time for the establishment of a collateral circulation, the changes in the intestine may be minimal, consisting of oedema and congestion of the gut wall, patchy or diffuse, and intramural haemorrhage. Compensated vascular occlusion may be manifest clinically by a temporary ileus, and complete recovery is possible if further extension of the damage does not occur.

More usually the vascular disturbance, whether caused by thrombosis or embolism, either arterial or venous, results in gross pathological changes. The most common of these is haemorrhagic infarction of the wall of the intestine. The gut is at first congested, swollen, and oedematous; then follow rupture of the capillaries and extravasation of blood throughout its wall. The gut becomes dull, plum-coloured, stiff, and inelastic, and gradually passes into a state of infective gangrene, becoming green or black. The changes are in fact the same as those in strangulated hernia. The extravasated blood also passes into the lumen of the intestine and into the peritoneal cavity. Some of that in the lumen may be passed on by a distal healthy portion of gut and give rise to bleeding per rectum, or it may be found in a diagnostic enema—an important point in differential diagnosis. The blood and oedema fluid in the peritoneal cavity give rise to a haemorrhagic peritoneal exudate, which is a very common finding. The affected portion of mesentery also undergoes gross changes; it becomes oedematous and friable, may be 1 in. (2.5 cm.) or more in thickness, and contains thrombosed vessels.

A very rare change is the development of anaemic gangrene in which a pale, bloodless infarct occurs, followed by putrefactive changes. The portion of intestine most commonly involved is the ileum, although in my own two cases it was the jejunum. No part of the intestine from the duodenum to the lower colon is exempt, and the extent of the affected area may be from a few inches to almost the whole of the intestine. An important point when considering treatment is that the limits of the infarcted area are not usually sharply defined but merge gradually into the normal portions.

Aetiology

The vascular occlusion may be primarily arterial or venous, the latter being the more common. As soon as the condition is developed, however, both arteries and veins become thrombosed. This is owing to the tendency of the thrombosis to spread when the circulation has been slowed down, and is responsible for some of the failures after operative treatment. Arterial occlusion is usually embolic and affects the superior mesenteric artery more often than the inferior. It may result from mitral stenosis, mural endocarditis, atheroma, pulmonary vein thrombosis, or pyaemia. Arterial thrombosis is usually associated with arterial degeneration, atheroma and arteriosclerosis being the common lesions.

Venous thrombosis may be due to a variety of causes. In many cases of mesenteric venous occlusion, however, no definite cause has been demonstrated. The number of such cases will probably diminish with a more diligent search for a causative factor. An important cause, and according to Cokkinis the most frequent, is peripheral sepsis in the portal area, arising from appendicitis, pelvic infection, or diverticulitis. Any of these may lead to portal thrombosis or portal pyaemia. All the blood in the mesenteric venous circulation has to pass through the liver. There are many possible causes of obstruction to the portal vein by pressure from without, the most frequent and important being cirrhosis of the liver. Peripheral venous thrombosis may sometimes be a cause. Changes in the blood itself may predispose to thrombosis, and in this connexion a blood disease such as polycythaemia rubra, leukaemia, splenic anaemia, or severe primary or secondary anaemia may be the initial lesion. Predisposing factors are debility, degenerative diseases such as alcoholism, inflammatory lesions, neoplasms, and occasionally mechanical factors such as trauma.

Symptomatology

Mesenteric vascular occlusion has the reputation of being almost undiagnosable. Its recognition is certainly difficult, but in a typical case there are features which should enable a diagnosis to be made if the disease is borne in mind.

No age is exempt, but the condition occurs most frequently between the ages of 20 and 50 (Cokkinis, 1926). Brown (1940), however, in an analysis of cases of venous occlusion found that the most common age incidence was between 50 and 60. The onset is associated with severe abdominal pain, colicky in character and centrally situated. This is often accompanied by considerable shock, and is followed by periodical recurrence of the colicky pain and vomiting. Borborygmi are often marked. The pain usually overshadows the vomiting, and this distinguishes the condition from most other types of intestinal obstruction. There is in some cases absolute constipation without passage of flatus; in others a motion may be passed containing altered blood. Melaena is an important diagnostic point, and if blood is not passed spontaneously it may be found on the examining finger or be obtained from a high enema. Abdominal distension becomes apparent, and the abdomen is tender and rigid, often more so on the left side. The affected coils of gut may be felt as a palpable lump. Free fluid can usually be demonstrated. Leucocytosis is usually present and *x*-ray examination may show multiple fluid levels. As time goes on the patient becomes severely ill with marked shock, subnormal temperature, rapid pulse, and low blood pressure; in fact he resembles a late case of intestinal obstruction with peritonitis. In cases of massive occlusion the element of obstruction may be overshadowed by the signs of internal haemorrhage due to the large amount of blood which may be lost into the infarcted intestine. Some of this haemorrhage may be external and become evident as haematemesis or melaena.

Diagnosis, Prognosis, and Treatment

In Trotter's large series the correct diagnosis was made in less than 5%. In the cases described by Cokkinis the diagnosis was established in approximately 15%, but many others in this group presented symptoms which should have made a diagnosis possible.

Important points to note in attempting to establish a diagnosis are: (1) a history or signs of a possible causative lesion—for example, endocarditis or cirrhosis; (2) the presence of blood in the bowel, either passed by the patient or found on examination by the enema test; (3) the presence or previous history of vascular occlusion elsewhere; (4) the presence of a blood dyscrasia; (5) severe pain, often greater on the left side, associated with signs of intestinal obstruction, free fluid, and sometimes a palpable lump. The differential diagnosis from other causes of intestinal obstruction, perforated peptic ulcers, and acute pancreatitis has to be made.

Of untreated patients more than 95% die; only those with a mild attack in whom an adequate collateral circulation is established will survive. With treatment the general mortality in cases of venous occlusion is approximately 68% (Brown, 1940), with a higher figure obtaining for arterial embolism. The mortality depends in part upon the amount of gut involved, and the prognosis improves if the length infarcted is less than 3 ft. (0.9 m.), although recovery with normal function has followed the removal of half of the small intestine.

Exploratory laparotomy should be undertaken early. The time factor is as important as in cases of perforated ulcer, and

more important than in most cases of obstruction. The patient should be rendered as fit as possible by intravenous therapy before operation. As soon as the abdomen is opened free blood-stained fluid will be encountered in considerable quantity. The affected portion of intestine is usually quite obvious, and if it does not actually present in the wound it can easily be found. Wide resection of the bowel should be performed, leaving a good margin of healthy tissue on each side of the infarcted segment, together with similar treatment of the affected portion of the mesentery. The presence of a second infarct in some other segment must not be overlooked. Continuity can be re-established by means of end-to-end or lateral anastomosis. If the large intestine is involved resection, with external drainage, should be performed, and continuity established at a later date. Exteriorization is not good treatment for the small gut; in one such case described by Atkins the complications were many and troublesome, although the patient finally recovered. Even the most desperate cases may be given a slender chance by the establishment of an enterostomy.

Case I

A printer aged 50 experienced a sudden attack of abdominal pain after working all night. The pain was colicky in nature and became worse during next day; he vomited three times, but his bowels had not opened. Two high wash-outs were given by his doctor without any result, there being absolute constipation from 9 a.m. No blood was obtained with the wash-out. On admission to hospital he was doubled up with pain; the temperature was 97.6° F. (36.4° C.), pulse 84. His general condition was healthy and there was no pulmonary or cardiac disease, sepsis, or thrombosis. The abdomen was moderately distended and very tender all over. An ill-defined tumour measuring several inches across was present in the centre of the abdomen. It was dull to percussion; there was also dullness in both flanks. Borborygmi were heard. The severe colicky pain was relieved by morphine. A diagnosis of intestinal obstruction was made and a laparotomy performed under spinal anaethesia. On opening the abdomen blood-stained fluid escaped and a large loop of engorged gangrenous small intestine was seen. Further examination showed that 2½ ft. (0.76 m.) of the lower part of the jejunum was involved with its mesentery, which was much thickened and oedematous. There was a gradual transition to healthy intestine on both sides of the infarcted portion. The affected portion, including its mesentery, was resected, blind ends were made, and continuity was re-established by side-to-side anastomosis. The abdomen was closed without drainage, and convalescence after operation was uneventful. The patient was discharged from hospital seventeen days after operation, and at the time of writing was quite well and leading a normal life.

Case II

A regimental sergeant-major aged 38 was admitted to hospital complaining of abdominal pain. He first experienced pain across the lower abdomen and in the left flank two years previously; it was sudden in onset and shooting in character. The abdomen became very distended and the patient vomited. His bowels had not opened, and the pain was so severe that he fainted in bed. The attack subsided spontaneously. Later he had another severe attack and several milder ones of the same nature, and he was admitted to hospital. As the pain was mainly in the left flank he was subjected to a complete renal investigation, with negative results. The day after his discharge from hospital he had his most severe attack, and then came under my care.

On examination his general condition was fairly good. The tongue was coated and dry and the heart normal; blood pressure 150/90. The lungs were healthy; the haemoglobin was 70%, and the Wassermann reaction negative. The abdomen was moderately distended, rigid, and tender, the maximum tenderness being to the left of the umbilicus, where a vague mass could be felt but not accurately defined. There was dullness in the flanks, and borborygmi were marked. The rectum was empty and ballooned, and there was no blood on the examining finger. An enema produced no blood, faeces, or flatus. A diagnosis of intestinal obstruction was made.

Laparotomy was performed under general anaesthesia. On opening the abdomen a considerable quantity of blood-stained fluid escaped. The vague tumour which had been felt on the left side of the abdomen was found to be two coils of deep-plum-coloured jejunum matted together and covered with flakes of fibrin. The mesentery was more than 1 in. (2.5 cm.) in thickness, and its vessels were seen to be thrombosed. Some 3 ft. (0.9 m.) of the upper jejunum was affected and this portion was resected, blind ends were made, and a side-to-side anastomosis was performed, keeping well clear of the infarcted region. After division of the mesentery, clot could be picked out of the vessels. The anastomosis was found to lie 1 ft. 6 in. (45 cm.) distal to the duodeno-jejunal flexure. A pint (568 ml.) of plasma was given during the operation, followed by intravenous saline and glucose. Convalescence was complicated by a post-operative bronchitis, but the patient passed flatus on the third day and the bowels acted spontaneously on the fourth. The chest soon cleared, and thereafter convalescence was smooth. It was a considerable time, however, before this man regained his appetite and began to put on weight. After a period at a convalescent home he was regraded category C (temporary) and returned to his Army duties free from symptoms. Histological section of the tissue removed showed a primary venous thrombosis, the cause of which could not be determined.

Discussion

Both of the above cases had a primary venous thrombosis of limited extent. Consequently they responded well to early operation and resection of the affected segment of the bowel. Fortunately, no further spread of the thrombosis occurred after operation, as sometimes happens. An important point in preventing this is to make the resection through healthy bowel and to remove all the affected portion of mesentery. In neither case was the diagnosis made before operation, although it was immediately obvious on opening the abdomen. Both cases presented the appearance of an early intestinal obstruction, but in neither was there a key sign such as haemorrhage from the bowel, evidence of cardiac disease, or venous thrombosis elsewhere, to suggest mesenteric occlusion. In the second case the only possible predisposing cause that could be found was a moderate degree of secondary anaemia. The pain in the left flank was a pronounced feature and had led to a complete renal investigation at another hospital before the pre-operative thrombosis occurred. Loin pain was also found by Fallis. It is possible that it occurs fairly constantly on the left side when the upper part of the jejunum is involved. It was noted during convalescence that a considerable time was required for the re-establishment of the appetite and a gain in weight, and this was thought to be due to the removal of a large portion of the active absorption area of the jejunum. The presence of a palpable lump is stated by Cokkinis and others to be unusual, and most of the statistics substantiate this. Its occurrence in both my cases was fortunate, but it is in no way diagnostic since there are so many possible causes of intestinal obstruction associated with a palpable mass. However, if it is associated with evidence of bleeding this sign is of greater value. The occurrence of previous similar but less severe attacks of pain in Case II was thought to be due to a small venous thrombosis in the mesentery resulting in a temporary ileus, with recovery on establishment of an adequate collateral circulation.

Treatment in each case was early operation with resection: in an established case this gives the patient his only chance of survival. Both these patients were in quite good condition, and the length of the intestine involved was not great. This contributed in no small measure to the favourable results. If the large intestine is involved, resection with drainage of both ends is the treatment of choice, but if this method is applied to the small bowel it is liable to be followed by troublesome complications (Atkins, 1937). What can be accomplished by bold surgery is shown by a consideration of Grey Turner's (1937) remarkable case complicating pregnancy in which 10 ft. (3 m.) of small intestine was resected and a Caesarean section performed at the same time. The patient survived, led a normal life, and had another pregnancy. The possibility that an anticoagulant such as heparin may be of use in the treatment of this condition has been considered, and Luke (1943) published a case treated by this means. The case was an early one of venous thrombosis involving the jejunum, and was proved by laparotomy. The wound was then closed, and 21,000 units of heparin were given in 21 litres of saline during the succeeding 10 days. The coagulation time was estimated six-hourly and was found rather difficult to control owing to variations in the rate of drip. A complete recovery ensued. Any case in which this treatment is adopted must necessarily be an early one, before serious infarction has occurred, otherwise there is a danger of profuse bleeding into the infarcted bowel or peritoneal cavity. Haematoma formation may occur in the laparotomy wound. It is doubtful whether cases can be obtained early enough for this treatment. However, it does seem that there is a possible field of usefulness for heparin when combined with operation, with a view to preventing any extension of the thrombosis. Earlier diagnosis and prompt

treatment are the keynotes to success in this very serious abdominal emergency.

Summary

The anatomy, pathology, and aetiology of mesenteric vascular occlusion are described, and some of the literature is reviewed.

Symptomatology and diagnosis are considered, and a plea is made for the earlier recognition of the disease. The importance of signs of cardiac, vascular, or blood disease, or of any evidence of haemorrhage from the bowel, is stressed.

Two personal cases, with recovery, are presented.

Treatment is discussed and the possibilities of the use of heparin are considered.

I wish to express my thanks to Surg. Lieut. C. J. Bintcliffe and Dr. J. G. Winternitz for their help in the treatment of the patients, to Dr. S. J. Scurlock, medical superintendent of Ronkswood Hospital, for his kind assistance in the preparation of the paper; and to the Director-General of Medical Services, Ministry of Pensions, for permission to publish.

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MYOPATHY WITH SPINA BIFIDA

BY

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Capt., R.A.M.C.

The following is an unusual and interesting case of myopathy associated with spina bifida.

Case History

The patient was a soldier, aged 30, formerly a country bus-driver. His paternal grandfather lived to a healthy old age. His father died of ? meningitis at 28; his mother at 45 from "tumour" of the uterus. He had no brothers, but there were two half-sisters by the same mother, both healthy. The patient had no knowledge of any familial disease.

In childhood he had no serious illness, but at school he noticed weakness of his legs. He became a gardener, but found the work too hard. In February, 1941, he had pneumonia and was in bed five weeks. During a protracted convalescence there was increased weakness, with wasting of the muscles of the chest and abdomen. For the last two and a half years the condition had steadily progressed. At no time had his muscles been bulky.

His height was 65½ in. (1.66 m.). His face was thin and expressionless, and wasting of the muscles of the shoulder-girdle and winging of the scapulae were present. There was no wasting of the forearm or small muscles of the hand. Active and passive movements were free and power good. Marked wasting of the erector spinae was obvious (see figs.). The abdomen was scaphoid, with wasting of all muscles except the erector abdominis. The muscles of the pelvic girdle all showed pronounced wasting; those of the lower leg and foot were not wasted, but there was a mild pes planus. Movements were full and power only slightly reduced. No muscular fibrillation was observed.

The spine showed scoliosis and a depression in the region of dorsal vertebrae 11 and 12, with a palpable gap. In this depression there was a non-hairy, non-pigmented mole. Radiographs confirmed non-union of the posterior arches of these two vertebrae.

The blood W.R. was negative, the C.S.F. normal and W.R.-negative, and the urine normal. No electrical reactions were taken. Although the cardiovascular system was normal, there was moderate tachycardia. The blood pressure was 120/80. Chest expansion was poor—only half an inch (1.25 cm.) in the nipple line. The breathing was almost entirely abdomino-diaphragmatic. Radiographs showed "some evidence of chronic bronchitis at the bases: diaphragmatic movements normal." All the cranial nerves were normal and all reflexes were present, although the abdominal reflexes were very weak. There was no sensory disturbance. No vasomotor or trophic changes were present.

Discussion

Exhaustive search through the literature of the last 25 years revealed only one other case of this association of conditions. Urechia and Dragomir (1942) described a case of myopathy with a spina bifida occulta of the first sacral vertebra. With respect to the regions of muscular atrophy and the absence of sensory disturbance their case resembled the one now reported. In certain features it was different: there was a heredo-familial trait, one sister and a nephew suffering from myopathy. A hypertrophic stage had occurred. The progress of the disease was more rapid, and the patient was bed-ridden at the age of 25. Their case was remarkable for a large pigmented hairy mole covering the right half of the abdomen.

The location of the bifida in the thoracic spine is not common. Wheeler (1920) found no evidence of spina bifida in 3,000

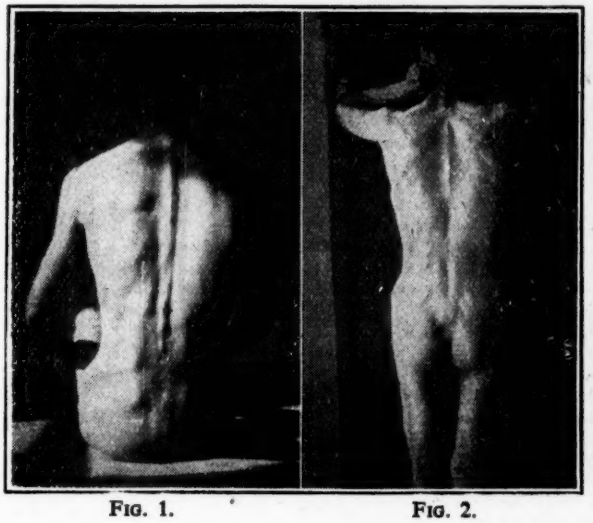

FIG. 1. FIG. 2.

thoracic vertebrae seen at the National Museum, Washington. Hadley (1941), examining a series of 1,500 consecutive spinal cases, found 3 instances of spina bifida in the thoracic region.

It is interesting to note that in the literature over the same period there are two recorded cases of spina bifida associated with a different form of muscular atrophy. In 1925 Guillain, Mathieu, and Garcin described a case of Charcot-Marie muscular atrophy with spina bifida of the first two sacral vertebrae. Heuyer, Hurez, and Feld (1942) reported a similar case.

It is difficult, if not impossible, to decide whether the occurrence in the same patient of two uncommon pathological conditions (myopathy and spina bifida) is due to chance concurrence or to some common aetiological factor—e.g., genetic make-up. Urechia and Dragomir (1942) quote numerous authors who have described various osseous deformities in cases of myopathy. Nevertheless during the last 25 years this particular association has been noted only once before in the literature on myopathies. This suggests that chance concurrence is the more likely explanation.

Summary

A case of myopathy with spina bifida is reported. The literature has been examined. One other reported case has been discussed and compared. The comparative rarity of spina bifida in the thoracic region has been noted. The association of the two conditions is thought to be a coincidence.

I wish to thank the Director-General, Army Medical Services, and Lieut.-Col. M. I. Silverton, R.A.M.C., for permission to publish this case.

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The Hospital Survey and Construction Act of the United States, which authorizes the nation-wide building of hospitals, requires that standards for the construction of all those built with Federal assistance under this scheme shall be defined by the U.S. Public Health Service. These standards, which are minimal, were recently drafted; the Federal Hospital Council has now accepted them. They fall into five classes: site, architectural, structural, mechanical (e.g., ventilation, plumbing, electrical fittings), and drawing specifications.

Medical Memoranda

An Unusual Case of Intestinal Myiasis

A primipara aged 40, during a routine visit to the antenatal clinic of Queen Mary's Hospital, London, E., produced a bottle containing three small white grubs about 5 mm. in length, which on cursory examination were thought to be the larvae of some fly. I questioned her as to the history of these grubs, and she told me the following story.

For the last two weeks she had been suffering from frequent attacks of diarrhoea and constipation accompanied by some general abdominal pain of a colicky nature. After noticing a few flecks of bright blood in her stools she had examined them more carefully, and on about four occasions just before seeing me she had passed two or three of these grubs, all of which showed signs of life. This alarmed her considerably, and she saved some of the specimens for further examination. I questioned her very closely as to the possibility of outside contamination, and she stated that this was absolutely impossible as all the specimens were quite fresh. As she is a patient of very clean habits and of average intelligence I consider her story to be true in every respect.

The treatment consisted in giving one fluid ounce of liquid paraffin at night for seven days, and this appeared to clear up the condition, for she has had no further symptoms or signs to date.

The grubs were sent to Dr. Fritz Van Emden at the Imperial Institute of Entomology, British Museum. They were identified as the larvae of *Ptinus tectus, Boield*. The adult is a yellowish-brown coleopterous insect about 3 mm. in length. Dried cereal foods are its favourite habitat, and upon these the eggs are laid. It is difficult to understand how the larvae can withstand passage through the stomach, but it is possible that the eggs, which have a resistant chitinous coating, may do so with subsequent hatching in the more alkaline portion of the bowel. Survival and growth here would be possible. The larva is covered with a growth of fairly thick pubescence arising from each segment of the body. The six legs each contain a single sharp claw and the biting jaws are quite formidable. By reason of this armament larvae can remain in the intestine for a considerable period, clinging to the villi and thus resisting peristalsis. The photomicrograph demonstrates some of the points mentioned.

Photomicrograph of larva of *Ptinus tectus, Boield.*, from the above case. Magnified 10 diameters, dark background illumination.

From the above short description of this unusual case it would seem that the infestation of the intestine by insectivorous larvae, which though recognized in the textbooks on parasitology is not, I believe, given much thought in this country, should be considered when one is diagnosing a case of diarrhoea accompanied by colicky pain and the passage of blood per rectum. One has only to consider the enormous population of flies and other insects which inhabit this country in the summer and autumn, gaining access to all manner of foodstuffs no matter what precautions may be taken, to see how easily infection could arise. To give one example: we all know how swarms of flies besiege a tree of ripening plums, feasting themselves upon the fruit; and as most insects lay their eggs on their foodstuffs in order that their larvae may gain sustenance, it would appear that these infected fruits would become an excellent vehicle for the infestation of man —especially when one considers how many children eat fruit without inspecting its contents. Thus it would seem that intestinal infestation with insectivorous larvae, known as myiasis, may be by no means as uncommon as we are led to believe.

My thanks are due to Dr. Fritz Van Emden for his part in identification of the larvae, to Dr. J. S. Sharpe for preparation of this specimen for examination by the microscope and for the photograph, and to Mr. Andrew McAllister, F.R.C.S., F.R.C.O.G., for his permission to publish the case.

D. S. SHARPE, M.R.C.S., L.R.C.P.

Severe Adult Diphtheria with Polyneuritis

During September, 1945, to February, 1946, inclusive, 100 cases of acute adult diphtheria were admitted to the 94th British Military Hospital, Hamburg. In the December and January there had been an epidemic type of severe faucial diphtheria, the clinical picture being gross toxaemia with membrane covering tonsils, uvula, and palate, bull-neck adenitis, and severe polyneuritic complications. Sporadic cases of this type had been observed in Holland and Belgium during the previous winter. Another important feature was the late onset of polyneuritis in cutaneous diphtheria. On admission the average duration of disease was three days; 60% were direct admissions.

TREATMENT

The minimum period in bed was five weeks, and four clearance swabs were taken from the twenty-eighth day of disease. Uncomplicated cases were discharged to the convalescent depot at the end of seven weeks and complicated cases were evacuated to the U.K. when fit to travel.

Antitoxin Dosage.—Nasal and aural: 24,000 units, intramuscularly. Mild faucial, unilateral membrane: 24,000–48,000 units intramuscularly. Moderate faucial, bilateral tonsillar membrane with little toxaemia: 48,000–80,000 units intramuscularly. Severe faucial: all cases received 80,000 units intravenously, repeated if necessary, the standard being the shrinkage of membrane and decrease of the bull-neck adenitis.

Penicillin Dosage.—All severe cases of faucial diphtheria were also given 200,000 units of penicillin daily for three days by continuous intramuscular drip. Cutaneous diphtheria cases had four-hourly penicillin spray, 500 units per ml., applied to the ulcers, as well as intramuscular diphtheria antitoxin.

The type of Klebs-Loeffler bacillus showed no relation to the severity of the disease. Of the severe faucial cases six were of the gravis and five of the mitis type, although in the whole series the gravis type predominated. Of the mild faucial cases one had polyneuritis after eight weeks. Four of the moderate faucial cases had polyneuritis, beginning as early as the end of the fifth week and as late as the twelfth week. Ten of the severe faucial cases had polyneuritis beginning from the end of the fifth week to the tenth week. The typical picture was a palatal paralysis at the end of five weeks, followed by a pharyngeal paralysis at the end of six weeks and generalized polyneuritis at the end of seven or eight weeks. Five patients had to be fed by nasal catheter for 15 days. Two had respiratory paralysis, one having to stay five days in the Both iron lung, being fed by nasal catheter. In all cases complicated by polyneuritis the period in hospital before evacuation to the U.K. was from 12 to 18 weeks. In the 100 cases recorded there was one death, due to early cardiac failure on the twelfth day.

Intramuscular penicillin did not seem to have any dramatic effect in preventing the spread of faucial membrane, reducing toxaemia, or preventing polyneuritic complications. Similar results have been reported by Dodds (1946) and Christie and Preston (1946), but as *C. diphtheriae* is penicillin-sensitive (M.R.C. War Memo, 1944, No. 12), penicillin should be given in all cases of severe diphtheria. Three of the 15 severe faucial cases had positive K.L.B. in the throat after 28 days in spite of 600,000 units of intramuscular penicillin.

Three of the seven cases of cutaneous diphtheria developed polyneuritis, and in each the original ulcer began on the penis. These cases were seen late and had large ulcers of the penis and suprapubic area. From previous experience penicillin spray four-hourly healed the ulcers quicker than the local application of diphtheria antitoxin. Owing to the late onset of polyneuritis the standard adopted was that, when the ulcers had healed, that date was put on the patient's chart as the first day of disease. Local paralysis around the ulcer areas was observed and also visual paralysis along with the polyneuritis.

SUMMARY AND CONCLUSIONS

Faucial diphtheria can be a very dangerous and prolonged disease of adult life.

Cutaneous diphtheria is apt to be missed in the early stages and can produce complications as severe as those of faucial diphtheria.

Systemic penicillin in the dosage mentioned has no dramatic effect in the treatment of diphtheria or in reducing the convalescent carrier rate.

Early intravenous diphtheria antitoxin is still the best line of treatment, although it does not prevent polyneuritic complications.

I should like to thank Lieut.-Col. Porter, R.A.M.C., Major Hinson, R.A.M.C., and Dr. A. H. G. Burton, late M.O.H. for Ilford, for their great help and advice.

Ilford Isolation Hospital. S. R. JAMIESON, M.D., D.P.H.

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Reviews

GRAY'S ANATOMY

Gray's Anatomy: Descriptive and Applied. Edited by T. B. Johnston, M.D., and J. Whillis, M.D., M.S. Twenty-ninth edition. (Pp. 1597; 1359 illustrations, of which 642 are coloured and 47 are *x*-ray plates. 70s.) London: Longmans, Green and Co. 1946.

The appearance of the twenty-ninth edition of Gray's *Anatomy* will be welcomed by students, practitioners, and teachers of anatomy. Well-illustrated and with a descriptive text in which all essential facts are plainly stated without verbosity, it has from its first appearance in 1858 been one of the most deservedly appreciated textbooks which make up a medical student's library. The present edition, revised and brought up to date by the inclusion of much recent work, has been edited and in parts rewritten by Prof. T. B. Johnston and J. Whillis of Guy's Hospital, while the section on the digestive system has been undertaken by Prof. Francis Davis of the University of Sheffield.

The need for a good textbook of systemic anatomy in addition to a book on regional anatomy or a dissection manual is well supplied by the present volume, which, though not aiming at the completeness of some of the larger Continental works published in several volumes, each comprising a particular system, nevertheless forms a reliable guide to much new matter which is of practical importance and to which adequate references are supplied as footnotes to the text. The notes also on applied and surface anatomy are a feature of special value as giving indications for the examination of patients for fractures or dislocations, and also for medical or surgical examination of internal organs. In this last connexion we should like to mention the excellence of the numerous plates, reproducing radiographs of the epiphyses, movements at articulations, and the relative positions and shape of internal organs.

The section on embryology comprises much new matter on the early stages of development, and many new illustrations, such as those showing the method of homotypical and heterotypical division of chromosomes, and photographs of various stages in the embedding of the human ovum in the uterine mucosa, representing recent work of American authors such as Hertig and Rock, and also early stages of development of the heart and blood vessels by Heuser, Streeter, and C. L. Davis. The role of chromosomes in sex determination and in human genetics has been ably dealt with in a short account of the theory concerning the mode of distribution of genes in the various blood groups, and the effects of their transmission from both father and mother through the oosperm to the embryo and foetus. The description of the central nervous system has been amplified by the inclusion of current conceptions of the functions of the various nuclei of the brain and spinal cord, and more particularly of the basal nuclei and hypothalamus, including a description of the routes by which co-ordination of these functions by tracts of nerve fibres may be effected, these tracts being clearly indicated in the figures by the use of distinctive colours.

Any points in the book that call for critical comment are rather in the way of omissions than commissions—e.g., in the description of the breast one would have liked to see an account with illustrations of the successive stages in its development *in utero*, and also of the microscopic structure of the lactating gland for comparison with the resting condition of the organ; moreover, from the morphological standpoint an account of the evolution of the glands as indicated by a study of their condition in lower mammals, and the significance of the development of nipples in the male, would have added greatly to the general interest of the purely anatomical description. The addition of a glossary also would, in our opinion, be a very welcome feature in any subsequent editions or reprints of the present volume. Gray's *Anatomy* considered as a whole is an authoritative standard work, suitable for the use of both junior and senior medical students, and a most valuable book of reference for practitioners and for all teachers of human anatomy.

INSTRUCTION IN GYNAECOLOGY

Textbook of Gynecology. By Arthur Hale Curtis, M.D. Fifth edition. (Pp. 756; 455 illustrations, chiefly by Tom Jones, including 36 in colour. 40s.) London and Philadelphia: W. B. Saunders Company. 1946.

Prof. Curtis's popular textbook has been extensively revised in its fifth edition, which is as beautifully produced as its predecessors. The illustrations throughout are superb, the coloured plates being particularly so. The text is clear and for the most part dogmatic—a feature that will commend the book to many readers but lessen its value to others. Most teachers will agree that undergraduates not only desire but require such teaching. General principles clearly and unequivocally expressed provide a foundation on which a more detailed knowledge can be built, but none the less the undergraduate should be encouraged to develop a critical mind. He should be taught the difference between facts and theories, and if these are not separated in the teaching of his mentors he cannot be blamed if he rejects as doubtful or inaccurate any unorthodox instruction he may be given.

Senior students and young specialists are likely to be even more critical of this book and for the same reason. It is not enough for an author to deny the value of endometrial biopsy as an aid to diagnosing genital tuberculosis, when increasing numbers of publications from many different workers in various parts of the world are drawing attention to its importance: nor is it convincing to be told that urethroplasty is an adequate method of treating all cases of stress incontinence of urine, when the results in good hands are so notoriously uncertain that many more extensive operations of the sling type have been designed for intractable cases. Similarly, the bald statement that abortion is a common cause of sterility is one which has been accepted for a long time, but in view of the national and international importance of the whole subject of fertility the accuracy of such statements is now being widely questioned. If it is true it should be confirmed by facts, but none is offered. It is somewhat strange in this connexion that the author states that the average intelligent physician should learn to care for his sterile and subfertile patients with results closely rivalling those of his highly specialized colleagues. Surely the whole subject of fertility is now so complex that this is barely possible, nor would the guidance given in this book to the practitioner be sufficient to make it so. The statement that, if a subtotal hysterectomy is performed on a patient in whom carcinoma of the corpus is suspected, the operation should be performed so as to avoid "spill" and the specimen opened in the theatre is another illustration of strange teaching.

In spite of the criticisms given, this is an excellent book and already widely popular; as such it should be careful to raise the standard of practice and not imply a willingness to compromise to the possible or probable detriment of the patient's welfare. If the surgeon is not competent to perform a total hysterectomy he should not be operating on a case of suspected carcinoma of corpus; and if he is competent he should be able to diagnose the condition before resorting to an inadequate hysterectomy. A textbook such as this should give guidance in such matters.

PSYCHIATRY FOR NURSES

Psychiatry. Theory and Practice for Nurses. By H. C. Beccle, M.B., M.R.C.P., D.P.M. (10s. 6d.) London: Faber and Faber.

This book purports to be a textbook for mental nurses training for their final examinations. In the preface the author bemoans the lack of understanding of human behaviour and the curious attitudes which men and women take towards life which lead to so much unhappiness, from the nagging wife or irritable father to major war. In the book, however, we find a comprehensive summary of the anatomy and physiology of the nervous system and practically all nervous and mental illness compressed into 240 pages. If a doctor knew all the "facts" contained in this volume he would have the basic knowledge needed for specialism, but whether he would be a competent neurologist or psychiatrist is another matter. It is still more doubtful if the acquisition of this knowledge by a nurse would make her a competent person to alleviate the miseries of those who are "sick in spirit."

If this book, whose author displays so much erudition and indeed clarity and accuracy of exposition, is needed for the training of the mental nurse, it forces us to ask ourselves whether we are not entirely on the wrong lines in the training of nurses. So far as mental illness is concerned the real understanding of the general nurse is conspicuous by its absence through no fault of the nurse; and only gradually is the psychiatrist himself beginning to know how to deal with true sympathy with his much afflicted patient. Is his chief assistant best trained by cramming her head with bare facts? Time alone will tell. Meanwhile, the aspirant to nursing qualification will find in this book all the factual material she requires. What she will make of this, and how she will use it, probably depends more on herself than on her teachers.

FIRST LINES IN BACTERIOLOGY

A Textbook of Bacteriology and Immunology. By Joseph M. Dougherty, M.A., Ph.D., and Anthony J. Lamberti, M.S. (Pp. 360; 102 illustrations. 22s. 6d.) London: Henry Kimpton. 1946.

Bacteria in Relation to Nursing. By C. E. Dukes, M.D., M.Sc., D.P.H. (Pp. 186; 20 illustrations, including 12 in colour. 12s. 6d.) London: H. K. Lewis and Co. 1946.

Aids to Bacteriology. By H. W. Scott-Wilson, B.Sc., B.M., B.Ch. Seventh edition. The Students' Aid Series. (Pp. 300. 6s.) London: Baillière, Tindall and Cox. 1946.

A Textbook of Bacteriology and Immunology, by J. M. Dougherty and A. J. Lamberti, of Villanova, Pa., U.S.A., is based on experience in teaching "premedical" and "predental" students and those "preparing to teach the biological sciences." As an introduction to the subject for such students it is excellent; for the medical student in his clinical years it is inadequate. It is a very readable book, in which the authors' aim to make the subject both interesting and easily intelligible has been well achieved. The introductory chapter on the development of the science is particularly good, as are those on general principles and methods. The descriptions of individual bacteria and of their relation to disease and laboratory diagnosis are simple and incomplete: to give examples, there is no mention of the coagulase test, the serological classification of haemolytic streptococci, types of diphtheria bacilli, or how to interpret the results of an agglutination test in the diagnosis of enteric fever. This book is therefore only introductory, and its title might well be altered to convey this.

Bacteria in Relation to Nursing, by C. E. Dukes, is intended for those training to be sister tutors, but may be found useful both practically and in preparing for examinations by nurses generally. It is written in a clear and pleasant, almost conversational, style, and is attractively produced and well illustrated by drawings. There are only two photographic illustrations, both showing nurses in uniform working in a laboratory. The main subjects are methods, the characters of the principal pathogenic bacteria, immunity, the collection and examination of various kinds of specimen, and sterilization and disinfection. A final chapter outlines a suggested course of practical instruction. The necessary simplification has been achieved without sacrifice of truth, but there are a few minor inaccuracies: it is said that agar is obtained from algae and that diphtheria bacilli will not grow in broth. It is hard on Dubos to describe gramicidin as a purely Russian discovery, and the mention of convalescent serum for the treatment as well as the prevention of measles may mislead. In the next edition we should like to see at least a paragraph explaining what viruses are (they are only incidentally mentioned in two places), and perhaps something similar might be done for protozoa.

The seventh edition of *Aids to Bacteriology,* by H. Scott-Wilson, is said to have been completely revised, but almost archaic features of much earlier editions survive in it and many modern advances are unmentioned. The characters of growth in gelatin and on potato are regularly described; one would prefer in connexion, for instance, with typhoid and dysentery bacilli to be told of some of the highly selective media which now facilitate their isolation. The greater part of the book "dates" to twenty or more years ago, and if it is to be of use to medical students it should be rewritten, preferably by a teacher familiar with their needs.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Phases in the Drinking History of Alcoholics. By E. M. Jellinek, Sc.D. (Pp. 88. $1.00.) Connecticut: Hillhouse Press. 1946.

A study of the behaviour of chronic alcoholics based on replies to a questionary; from the laboratory of applied physiology, Yale University.

Principles of the Contact Lens. By H. Treissman, F.R.C.S., D.O.M.S., and E. A. Plaice. (Pp. 88. 10s. 6d.) London: Henry Kimpton. 1946.

Intended for ophthalmologists. General description of contact lenses, their optical merits, and tests of suitability for patient.

Intelligence and Fertility. By Sir Cyril Burt, M.A., D.Sc. (Pp. 43. 2s.) London: Hamish Hamilton. 1946.

Survey prepared at request of Royal Commission on Population. Investigates problem of whether differing birth rates in different sections of the population will alter the inherited mental qualities of the nation.

Ambulatory Proctology. By A. J. Cantor, M.D. (Pp. 524. 42s.) London: Hamish Hamilton. 1946.

An American study of ambulatory surgical and medical treatment of diseases of anus, rectum, and colon.

Dentistry: An Agency of Health Service. By M. W. Carr, D.D.S., and others. (Pp. 219. $1.50; 8s. 6d.) New York: The Commonwealth Fund. 1946.

A survey of the history, present problems, and future trends of dentistry in the United States.

The Hospitals Year-Book, 1945-6. Edited by J. P. Wetenhall, B.A. (Pp. 279. No price.) London: The British Hospitals Association. 1946.

The fourteenth issue of this directory of the units composing the nation's hospital services, including a review of the last decade and current events.

A Textbook of Clinical Neurology. By J. M. Nielsen, B.S., M.D., F.A.C.P. Second edition. (Pp. 699. $7.50.) New York and London: Paul B. Hoeber (Harper and Bros.). 1946.

Designed for students and practitioners; covers the whole field of clinical neurology. New subjects treated include toxoplasmosis, neuromuscular exhaustion, and penicillin therapy. Many illustrations.

Researches on Pre-Natal Life. Volume I. By Sir Joseph Barcroft. (Pp. 292. 37s. 6d.) Oxford: Blackwell. 1946.

Brings together the author's researches on the subject. Topics discussed include function of the placenta, influence of diet on growth of foetus, the foetal circulation, utilization of oxygen, prenatal and neonatal circulation.

Nutrition in Public Health. By Lucy H. Gillett, M.A. (Pp. 303. 14s.) Philadelphia and London: W. B. Saunders. 1946.

Intended to instruct parents and teachers in the basic principles of nutrition, the planning of meals, special diets, and racial food customs.

Précis d'Anatomie: Névrologie. By Jacques Huguier (Pp. 312. 200 francs.) Paris: Librairie Maloine. 1946.

The anatomy of the nervous system in summary and diagrammatic form. Profusely illustrated.

L'Ophtalmologie du Practicien. By A. Cantonnet. Ninth edition. (Pp. 172. 100 francs.) Paris: Librairie Maloine. 1946.

A concise outline of ophthalmology for the practitioner.

R.K.G. Rheocardiography. By W. Holzer, K. Polzer, and A. Marko. English translation by E. M. Kreidl. (Pp. 43. 7 Swiss francs.) Vienna: Wilhelm Maudrich. 1946.

An electrocardiographic investigation of the cardiovascular system.

The Chemistry of Anaesthesia. By J. Adriani, M.D. (Pp. 530. 35s.) Oxford: Blackwell. 1946.

The book is in three parts: (1) inorganic phases of chemistry related to anaesthesia; (2) organic chemistry, and in particular the chemistry of depressant drugs; (3) biochemical aspects of anaesthesia. The fruit of the author's postgraduate teaching at New York University College of Medicine.

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THE PRESIDENTS AND MR. BEVAN

The three Presidents of the Royal College of Physicians, Royal College of Surgeons, and Royal College of Obstetricians and Gynaecologists on Jan. 2 wrote a letter to the Minister of Health on what the *Times* has described as "the growing gulf" over the National Health Service between the doctors and Mr. Bevan. On Monday of this week the Minister of Health replied to the Presidents' letter. Both communications are published in the middle pages of this week's *Journal*. These two documents are of the highest importance and deserve the closest study by the medical profession. The three Presidents express concern over "the opposition of a substantial part of the medical profession to any renewal of discussions" on the National Health Service. They wish to prevent an impasse arising. They believe that the form of the Service will depend to a large extent upon the Regulations and that several objections of the profession may be met in the framing of these Regulations. They therefore ask the Minister to clarify some points. The first is the fear of many doctors that in entering into discussions on the Regulations they would imply approval and acceptance of the main provisions of the Act. So far as the general practitioner part of the Service is concerned the Presidents bring to the notice of the Minister three points for reconsideration: the basic salary, the tribunal, and "the liberty of movement of general practitioners." As to specialist practice in the new Service, they state: "In the background, just as in the case of general practitioners, there is the general issue of the freedom of the profession and the availability to the people of independent medical advice." They stress the profession's desire for the continuation of independent practice.

The Minister in his reply assures the Presidents that there is no ground for the fear that in discussing Regulations medical men "would compromise their position by implying their approval and acceptance of the main provisions of the Act." He adds: "Every doctor will have to decide for himself when the proper time comes whether or not he should take part in the new Service, and the profession as a whole will be free to determine their views on the Service when they know what it is to be. The resumption of discussions now would not prejudice these eventual decisions." The Minister goes on to ask for the profession's "help and advice in this task"—that is, in framing Regulations. "I shall endeavour," he observes, "to meet any views of the profession which do not conflict with the principles of the Act." He states his readiness to discuss the question of the basic salary; observes that in the new Service the full civic rights of doctors will be preserved; and states "there is no power to direct a doctor to go anywhere or do anything." On the question of professional freedom the Minister writes: "It is a basic principle of the new Service that there should be no interference with the clinical freedom of any doctor—specialist or general practitioner"; it is also a principle of the Service that "independent specialist practice should be free to continue."

We conclude with this comment in a leading article in the *Times* of Jan. 6: "Yet a crisis of confidence has been precipitated, and it cannot be denied that Mr. Bevan himself has helped to precipitate it." Can this crisis of confidence be resolved, and does the Minister's letter contribute to this desirable end? At their Division meetings before Jan. 28 members of the B.M.A.—with the final figures of the plebiscite in front of them (see pp. 64-5)—will have to ask themselves this question and decide to what extent the Minister's letter modifies the position.

DIET AND LIVER DISEASE

In reviewing our present knowledge of the significance of nutritional factors in the causation and treatment of liver diseases Prof. L. J. Witts has successfully accomplished a formidable task. In two short articles, published on page 45 of this number and on page 1 of last week's issue, he has covered most of the important experimental and clinical developments in this field and has brought together much valuable information from widely diverse sources. It is obvious that considerable differences exist between the types of liver disease produced artificially in experimental animals and those most familiarly known in human subjects; at the same time the lesions found under experimental and clinical conditions are often sufficiently similar to make their comparison instructive.

The infiltration of the rat's liver with excess of fat, which is taken by Witts as a starting-point in approaching his subject from the experimental side, has been well known to nutritionists for many years. The fat content of the liver may readily be increased tenfold or more by including much fat in the diet and simultaneously withholding substances which facilitate the dispersal of fat from the liver. These "lipotropic" agents include choline, a constituent of lecithin, and methionine, an amino-acid containing sulphur which is present in casein and other proteins of high nutritional value. More recently it has been found that the livers of animals kept for some months on a diet which produces fatty livers eventually develop cirrhosis, usually with the formation of a brown pigment known as "ceroid."[1] Since in this country the scarcity and high price of spirits has practically eliminated alcohol as a cause of cirrhosis, it is interesting to speculate whether the 2,000 cases which are usually in process of dying from this disease can be due to nutritional deficiency. Witts points out that while the position in England is uncertain there is ample evidence that liver diseases are associated with faulty nutrition in the Tropics. Thus fatty infiltration of the liver occurs in "kwashiorkor," or malignant malnutrition,[2] a disease which is common in grossly malnourished African natives. Cirrhosis of dietary origin is common in children in India, Ceylon, and China.

[1] Lillie, R. D., Daft, F. S., and Sebrell, W. H., *Publ. Hlth. Rep. Wash.*, 1941, **56**, 1255.

[2] *British Medical Journal*, 1946, **1**, 958.

Focal necrosis of the liver is another lesion caused by deficiency of protein in rats, its onset being sudden rather than gradual as in the development of cirrhosis. The missing nutrient here appears to be cystine, another amino-acid which contains sulphur. Cystine, unlike choline and methionine, has no lipotropic action, and its addition to the diet in excessive amounts appears to favour the development of cirrhosis. Witts reminds us that sulphydryl groups are concerned in the vital enzyme systems of the liver, which may explain why liver cells deprived of cystine and methionine should become unduly vulnerable to the toxic action of chloroform, carbon tetrachloride, or arsenical drugs. The whole story of the relation of liver damage to diet, however, appears to cover a wider field. Though dosing with sulphur compounds before or very soon after anaesthesia with chloroform is effective in preventing liver damage in suitable circumstances, it is clear that under other conditions widely different substances may be equally effective. Thus the increased vulnerability to toxic agents due to starvation may be checked by giving carbohydrate.

Information obtained from animal experiments and the application of it to the benefit of human sufferers from liver disease appears to favour the maintenance of sound general nutrition rather than the extensive exploitation of choline, methionine, or cystine as drugs. In regard to cirrhosis better results are obtained by giving a good diet rich in protein rather than by attempting to lighten the work of the liver by giving a diet high in carbohydrates. Treatment with methionine and choline, according to Morrison,[3] is beneficial even when the diet is already rich in protein, but the experience of other workers has been less convincing. Acute necrosis of the liver in the human subject is a much rarer disease than cirrhosis and must be diagnosed with care. It is not surprising, therefore, that our knowledge of its dietary treatment should be scanty. In the present state of doubt the clinician may well concentrate on the relief of shock with fluids, glucose, and milk, though the analogy with experimental liver necrosis suggests that research on the value of proteins and amino-acids might be well rewarded. On the other hand infective hepatitis, in common with the closely similar homologous serum jaundice and post-arsenical jaundice, appears to have no parallel in the experimental animal. However, in recent years opportunities for clinical research, particularly among troops, have been all too frequent. The results of treatment with relatively small doses of choline, methionine, and cystine have on the whole been unconvincing, and in view of the benign nature of the disease the intravenous injection of the large doses calculated to be necessary from the results of animal experiments seems quite unwarrantable. Witts advises a light diet with plenty of partially skimmed milk, but considers that it does not matter much what the patient eats provided he keeps on eating. An interesting point, which appears to emphasize the importance of diet in infective hepatitis, was noticed during the war: poorly nourished coloured troops, though relatively free from the disease, had, when once infected, a much higher mortality rate than that of white troops.

While therefore we have considerable knowledge of the specific nutritional factors concerned in the production and prevention of liver diseases in experimental animals, we can still only recommend that human liver diseases should be treated by a diet which is generally sound, wholesome, and otherwise suitable. Possibly this gap between theory and practice may be explained by the fact that experimental knowledge, though extensive, is still far from complete. The study of experimental liver disease is indeed complex. Thus excess of fat, excess of cholesterol, imbalance of vitamins of the B complex, and even starvation all tend to increase the fat content of the liver. Choline, protein, methionine, the cyclic alcohol inositol, and the pancreatic hormone known as lipocaic are among the substances having lipotropic action, but they are effective in different degrees according to the factors tending to cause the fatty infiltration. Recent work has suggested that the situation may be complicated by the interplay of many other substances. Dam and Kelman,[4] for example, have claimed that in certain circumstances vitamin E has the same action as inositol, and that it appears to be necessary for the formation of lipocaic. In the production of cirrhosis certain fats are more active than others, and cod-liver oil in particular seems to promote the formation of ceroid pigment.[5] On the clinical side, moreover, further complications may arise through the secondary effects of disease. Thus the metabolism of vitamin A, stored mainly in the liver, is disturbed by both acute and chronic human liver diseases, and in cirrhosis the reserves are often completely exhausted.[6,7] We are faced, therefore, with a complicated network of interrelated biochemical systems for the unravelling of which prolonged and intensive research will undoubtedly be necessary.

[3] *Ann. Intern. Med.*, 1946, **24**, 465.

[4] *Science*, 1942, **96**, 430.
[5] Victor, J., and Pappenheimer, A. M., *J. exp. Med.*, 1945, **82**, 375.
[6] Wolff, L. K., *Lancet*, 1932, **2**, 617.
[7] Moore, T., *Biochem. J.*, 1937, **31**, 155.

THE MEDICAL OFFICER OF HEALTH

In January, 1847, the first medical officer of health in this country took up his appointment. The event was one which had far-reaching effects on the health of the country, and the occasion warrants a brief survey of the circumstances which led up to the appointment and to the results which have been achieved in the field of public health during the last hundred years, discussed elsewhere in this issue.

The starting-point of all our health measures was the cholera epidemic which swept this country in 1831–3. In his *English Sanitary Institutions* Sir John Simon says that its importance "lies chiefly in the circumstance that, during the alarm, many intelligent persons throughout the United Kingdom had occasion to become more critically cognizant than they had ever before been of the sanitary conditions under which the mass of the people were living." Despite the grievous losses occasioned by the cholera, it was not immediately recognized that the Boards of Health which were set up at the time need be anything but temporary institutions. The period between 1834 and 1845 was marked by the labours of Edwin Chadwick in calling attention to the sanitary conditions of the labouring population and in demanding their redress. 1838 saw the issue of the valuable report by Southwood Smith *On some of the physical causes of sickness and mortality to which the*

poor are particularly exposed, and the Royal Commission on the Health of Towns reported in 1844 and again in 1845. Many medical men appreciated that official action would be necessary in order to reduce the mortality which resulted from the prevalent conditions, and it must have been realized by some that what was wanted in each industrial area was the specific appointment of a doctor to co-ordinate the work of prevention which had been shown to be so necessary. It is a significant fact that fifteen years were to elapse between the beginning of the cholera epidemic and the appointment of the first medical officer of health.

Of the men who were active in provincial cities in pointing out the need for sanitary reform few were better known than William Henry Duncan, of Liverpool. Born in 1805, he was Physician to the Royal Infirmary, Lecturer in Medical Jurisprudence in the Medical School, and from 1837–41 he was President of the Liverpool Medical Institution. In 1843 he published the text of two lectures in which he pointed out that the average age at death in Liverpool, Manchester, Leeds, and Bolton was 19 years, and that 20% of the population of Liverpool lived in cellar dwellings. In 1845 he was the principal speaker at a public meeting for the purpose of establishing a Liverpool Branch of the Health of Towns Association. In 1846 the Town Council of Liverpool procured the passing of three private Acts, the third of which—the Liverpool Sanitary Act—empowered the Council to appoint "a legally qualified medical practitioner, of skill and experience" as "the Medical Officer of Health for the Borough of Liverpool." It was almost inevitable that Duncan should be offered this appointment. He accepted on a part-time basis, and his duties began on Jan. 1, 1847. In the following year his salary was raised to £750 per annum, and he became a whole-time officer. Duncan's work in Liverpool is worthy of the highest praise. In the year of his appointment there were 5,845 deaths from "fever" and 2,589 from "diarrhoea" in Liverpool, and in 1849 the population of 300,000 suffered 5,245 deaths from cholera. Duncan laboured for the provision of hospital beds, and for facilities to enable the district medical officers to visit the patients. In three years he reduced the percentage of the population living in cellar dwellings from 12 to 2; and in the 16 years of his official work the death rate in the city fell from 39 to 27 per 1,000. Sir John Simon said of him that "with the ungrudging confidence and support of a very public-spirited local authority he established methods of work, and initiated courses of improvement, which have continued to the present day."

The sequel to Liverpool's pioneer effort is better known. In 1848 the Corporation of the City of London secured the passing of the City Sewers Act, which empowered it to appoint a medical officer of health. It is interesting to note that the duties and functions of this officer are set out in the Act in terms which are practically identical with those used in the Liverpool Act. John Simon was appointed to the post at the age of 32 years, and he held the office until he was made the first medical officer to the general Board of Health seven years later. In 1855 medical officers had to be appointed to the various vestries and district boards in London, and the Public Health Act of 1872 required every provincial sanitary authority to appoint a medical officer of health. In this way the appointment of professional health officers throughout the country was at last established—forty years after the inroads of cholera had directed the attention of enlightened members of the public to the necessity for some such measure.

Sir Allen Daley, who has himself been a medical officer of health for the long period of 35 years, has dealt sympathetically and authoritatively with the story of the health officer in his presidential address to the Society of Medical Officers of Health. In comparing the important statistics for 1847 and for 1945 respectively he points out that, though the birth rate has declined by almost half, the death rate has fallen from 24.7 to 11.4 per 1,000, the infantile mortality rate from 164 to 47 per 1,000 live births, and the maternal mortality rate from 4.52 to 1.84 per 1,000 live births. These are striking figures, and they should not be obscured by the fact that the statistics for certain conditions which are more prevalent in later life—and which were incidentally much more difficult to diagnose correctly in 1847—have shown a marked increase. Nevertheless, these adverse statistics occur as pointers to the directions in which research and improved administrative measures are most likely to achieve successful results.

The Medical Officer of Health has never been the most lauded member of the medical profession. The title in itself is cumbrous and does not describe his work accurately. Presumably the Liverpool Corporation of 1846 was responsible for coining the title, though the influence of Whitehall cannot be excluded. In any event, the unfortunate choice had come to stay. Weighted during each successive decade with increasing administrative responsibilities, with staffs grown to proportions sometimes almost unmanageable, he has developed into a professional administrator with the heaviest of responsibilities—that of the health of his fellow citizens. In such conditions most of our distinguished officers have continued to retain the scientific outlook, and many have added to the sum of knowledge. Perhaps never in their long career have the virtues of the Medical Officer of Health received such spontaneous recognition from the public at large as during the late war, when bombing led to conditions which were apparently so conducive to the spread of infectious disease. The spontaneous gratitude which was often then expressed by members of the public was a source of gratification to hard-worked heads of health departments.

The period between 1930 and the present day has been one of much increased responsibility for the medical officers of health of large hospital authorities. Under their guidance, and frequently their active administrative control, the municipal hospitals have been altered beyond recognition. Now, under the provisions of the new Act, these responsibilities will pass to the officers of Regional Authorities, but the chief health officer of the area will probably have other onerous duties placed on his shoulders.

Perhaps the chief danger besetting the M.O.H. is that he may see administration as an end in itself and not as the means for helping the individual citizen, but despite criticisms of their work in detail—sometimes deserved—medical officers of health have made substantial contributions to the nation's well-being.

A FORETASTE OF CONTROL?

That determined opponent of administrative medicine, Dr. Foxell, of Birmingham, gives, through the courtesy of Sir Ernest Graham-Little, a further illustration in this week's correspondence columns of the awkward situation in which the administrator places himself (or herself) in attempting to intervene in the treatment of the individual patient. It must, of course, be recognized that the Ministry of Food in times of shortage has to see that available supplies are evenly distributed and that no unfair discrimination is made in the case of any one member of the community. It is recognized, too, that categories for favoured treatment must be drawn up and that there must be some guiding rules for the extent to which extra allowances can be granted. To criticize the recent action of the Ministry of Food is not to ignore the valuable work done by it under the initial inspiration of Lord Woolton during the war years. But the writers of two letters criticizing the view expressed in the annotation in the *Journal* of Dec. 28 seem to us to have missed the principle at stake. It is almost unnecessary to say in these columns that the extra fat demanded by Dr. Foxell for his patient would not have saved the patient's life—Dr. Foxell believed it would prolong it. The practice of medicine is first and foremost a humane art, and the doctor treating a sick person does not treat a disease but an individual. Let us recall the facts once more. Dr. Foxell's patient with carcinoma of the oesophagus was, on expert advice, given a certain diet in hospital which included two ounces of fat a day in the form of butter or margarine. When he was discharged from hospital this regime was continued on the grant by the local Food Office of the extra fat. The details were then sent from the local Food Office to the Ministry of Food, and the medical advisers, when consulted, quite properly gave the Ministry an impersonal assessment of the case. Armed with this, the Parliamentary Secretary to the Ministry of Food gave an impersonal ruling, and the patient —a person—is deprived of what his own doctor has considered to be necessary for him. We do not question the good faith of the administrators, but did they for one moment stop to consider the state of mind of a man who probably knew he was doomed to die and who therefore clung to every chance of prolonging what little life there was left to him? Here was a sick person who had been carefully and conscientiously treated in hospital and who had been receiving a certain diet as the result of a full consideration of his case by the medical men directly responsible to him. When his regime was rudely interrupted by administrative interference what must that patient have thought first of all of his own doctors, and secondly of the State, whose function it is to safeguard the rights of the individual? Dr. Back, in his well-argued letter, seems to miss the point that the patient had been granted the increased fat recommended. The situation would have been different if he had not received the extra ration. But as he had received it the intervention of the State must first of all make him lose confidence in his medical advisers, and for the State to do this to a dying man would seem to us to be grossly inhuman.

What has worried thoughtful medical men during the past years' discussion on a National Health Service has been this very question of interference of the State with what is called the doctor-patient relationship. Some sceptics have believed that this was a mere slogan, and those in our own profession who have believed this have usually not been practising doctors. Dr. Foxell's case expresses better than anything else what this doctor-patient relationship is and what happens when the State, through well-meaning persons who have never seen the patient, interrupts a regime of treatment. If this can happen here and now, what will happen when the medical profession is nationalized and the responsibility of every doctor is divided between the State and his patient—with the State as paymaster?

Dr. Foxell's further illustration in this week's correspondence columns once more shows the dilemma of the administrator who tries to treat a sick person. The details are there for all to read. What conclusions can be drawn from them? The Ministry's medical advisers are eminent, high-minded men, widely respected by their professional colleagues. They have done no more than give the Ministry of Food the correct examination answer to a question, and for this, if it may be said without undue flippancy, they deserve full marks; but, as in the case of all answers to examination questions, the answer must be incomplete because the one essential piece of evidence is missing—namely, the patient himself. No sick man or woman or child can be treated on textbook lines. The clinician's job is to treat a person, and this cannot be repeated too often. Even Dr. Watson, Sherlock Holmes's professional colleague, would have regarded such a statement as elementary.

RINGWORM OF THE FEET

It would be a diverting exercise to consider the many different treatments of foot ringworm during the last thirty years. Few have outlived the two established favourites: Whitfield's ointment and Castellani's fuchsin paint. Ringworm of the feet was recently a matter of consequence to military efficiency, because though a minor affection it can become sufficiently disabling to incapacitate. Experience gained in war medicine does not always advance civilian practice, but treatment of parasitic diseases provides an exception to this generalization. A contribution[1] from Johns Hopkins Hospital on sodium caprylate in the treatment of dermatomycosis of the feet is a case in point. A complementary paper[2] shows the frequency and significance of this form of ringworm in North America. (We have recently[3] commented on other American work on the treatment of fungous infection of the feet.)

Of 871 entrants to the U.S. Naval Academy evidence of foot ringworm—peeling of the skin, fissures, or maceration —was present in 59.9%, corresponding to figures[4] of the incidence among male entrants to California University in 1928. Of the naval cadets 1.7% who were clinically negative gave positive results on direct microscopical examination; this suggests they might be carriers, or persons in whom

[1] Keeney, E. L., Ajello, Libero, Lankford, E., and Lois, Mary, *Johns Hopk. Hosp. Bull.*, 1945, 77, 422.
[2] Ajello, Libero Keeney, E. L., and Broyles, E. L., ibid., p. 440.
[3] *British Medical Journal*, 1946, 2, 700.
[4] Legge, R. T., Bonar, L., and Templeton, H. J., *J. Amer. med. Ass.*, 1929, 92, 1507.

the fungus will become active only under environmental changes—an observation throwing new and perhaps disconcerting light on the prophylaxis and treatment of tinea pedis.

The paper by Edmund L. Keeney and his colleagues[1] on sodium caprylate arose out of observations on its effectiveness against *Monilia albicans*. The fungistatic effects tested by the agar cup-plate technique of Ruehle and Brewer showed remarkable inhibiting action on the causal trichophyton, and an associated incomplete bacteriostasis of streptococci and staphylococci. For the clinical investigation at the U.S. Naval Academy ninety-one midshipmen with foot ringworm, confirmed by laboratory tests and culture, were divided into two groups; forty-six were treated with sodium caprylate ointment; forty-five acted as controls. Direct examination of the treated group gave 27.5% after two weeks and 9.3% after four weeks with slides showing the trichophyton, or 90.7% entirely free from the fungus. The later records were less satisfactory: after five and six weeks' treatment 14.2% and 12.8% positive slides respectively were obtained, due to a tendency to the irregular use of the remedy after the first enthusiasm and the clinical aspects had declined. This result must have meant that some of the 90.7% symptomless were either reinfected or not entirely free from the fungus. The authors' belief that the ointment, the formula for which is given below, provides a new and improved method of treatment is supported by their published results.

Sodium Caprylate Ointment

Caprylic acid	10.00%
Sodium hydroxide (90% of theoretical amount required)	2.45%
Diethylene glycol mono-ethyl ether	3.00%
"Carbowax (6000)"	47.50%
n-propyl alcohol	10.00%
Zinc caprylate	5.00%
Water	22.05%

Note.—10% of the above caprylic acid is left free for a final *p*H adjustment to 8.0.

METABOLISM AND THE LIVER IN "MEDICAL SHOCK"

In an interesting paper Davidson and his colleagues[1] report studies on "peripheral vascular failure," by which they mean apparently "states of low blood pressure." Their cases include such varied conditions as pneumonia, pericarditis, myocardial infarction, and barbiturate poisoning. They found that the blood sugar was raised, as was the lactic acid of the blood, while the bicarbonate reserve was lowered. The alpha amino-acid nitrogen of the blood was often elevated, and there was sometimes considerable azotaemia. The prothrombin time was lengthened, and there was often a slight rise in the icterus index. In the fatal cases there was usually some change in the liver, such as focal necrosis and degeneration, especially in the centres of the liver lobules. Blood alpha amino-acid nitrogen does not normally rise with increases in nitrogen metabolism; but if the recognized increased nitrogen catabolism of peripheral vascular failure is associated with a failure of deamination due to impaired liver function, then an increase in alpha amino nitrogen might be explicable.

From the same school there had previously been reports of similar biochemical changes in cases of burns and in haemorrhagic shock, anoxia, and acidosis.[2] In a severe case of burns the blood sugar may reach as high as 300 mg. per 100 ml. These patients, however, are sensitive to insulin, and when more glucose is given it seems to be normally metabolized. An increase in protein catabolism and gluconeogenesis from protein was thought to be possibly responsible for this rise in blood sugar. Alpha amino nitrogen is an intermediate product in gluconeogenesis from protein, but it does not normally accumulate in the blood as it is easily dealt with by the liver.

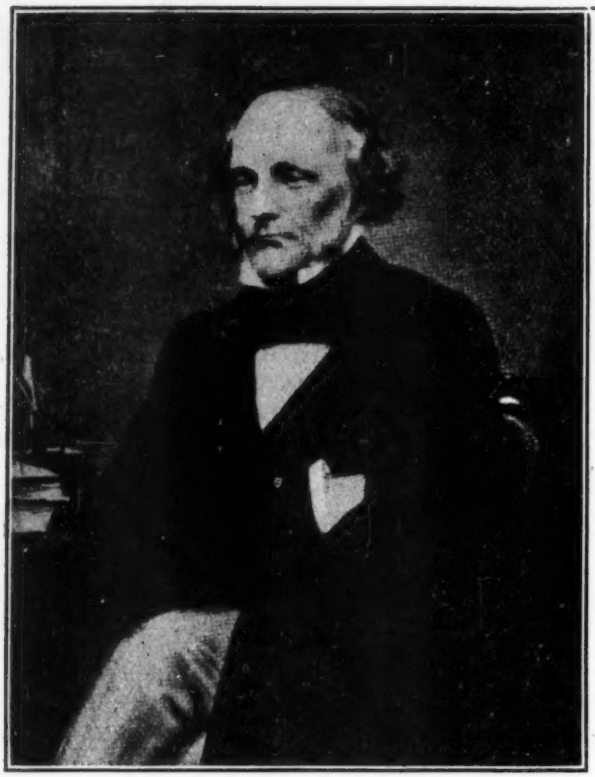
These changes then are all secondary consequences of anoxia or of a depressed circulation, particularly when associated with low blood pressure. A good deal of attention has been given in America to the contribution these metabolic disturbances may make to the morbid process of shock. It is well known that when some cases of haemorrhagic shock have gone on too long with a low blood pressure they may not recover despite apparently adequate transfusion; at this stage they are said to be "irreversible." The recognition of profound metabolic disturbances associated with liver damage in shock in animals and in man led to the idea that these biochemical changes might be an important factor in the "irreversible state."[3] This hypothesis has been put to the test by Frank, Seligman, and Fine.[4]

If bled dogs are kept with a blood pressure down to 30 mm. Hg. for sufficiently long they will certainly die even if transfused. Frank and his colleagues arranged that such dogs should be vivi-perfused by cross-circulation from donor dogs without raising the blood pressure of the recipient. Blood from the carotid artery of the donor dog was led into a recipient vein through a pressure-reducing valve, while blood flowed from the femoral artery of the recipient into the femoral vein of the donor as soon as the recipient's arterial pressure rose above 30 mm. Hg. By connecting the donor dog's artery to the splenic vein a rich arterial blood supply was assured to the liver, though otherwise the animal was still "shocked." Of 12 dogs whose livers were thus maintained 11 survived when transfused after a period of shock ordinarily long enough to render transfusion ineffective. Of 17 dogs similarly treated except that the donor's blood entered the jugular vein 15 died after late transfusion. This seems to demonstrate clearly that loss of liver integrity is a significant factor in the collapse of the organism in advanced haemorrhagic shock and that the preservation of liver function is of crucial importance in recovery.

These experiments gave Frank and his co-workers an opportunity to investigate the part played by biochemical changes in contributing to death from shock. Disturbances in intermediary metabolism were less marked in shocked dogs being vivi-perfused than in dogs not so treated but in an equally severe degree of haemorrhagic shock. The presence of a healthy liver did not completely prevent the development of these metabolic changes, and it therefore seems unlikely that they contribute specifically to the fatal issue. The exact way in which the liver protects the organism against "irreversible shock" is not clear, but disturbance of some unrecognized "detoxicating" function is a possibility.

These experiments render unlikely the hypothesis previously suggested by Wiggers and Werle[5] that "irreversibility" is brought about by heart failure from prolonged depletion of coronary flow. They also make a weighty contribution to the problem of low blood-pressure states, and bring a deeper understanding of the final mechanisms common to a variety of different types of circulatory failure.

[1] *New Engl. J. Med.*, 1946, **234**, 279.
[2] Ibid., 1944, **231**, 437.
[3] *J. exp. Med.*, 1944, **79**, 9.
[4] *J. clin. Invest.*, 1946, **25**, 22.
[5] *Amer. J. Physiol.*, 1942, **136**, 421.



William Henry Duncan (1805–1863)

A PUBLIC HEALTH CENTENARY

On Jan. 1, 1847, Dr. W. H. Duncan was appointed by the City of Liverpool as the first salaried medical officer of health in Great Britain.

The interest of the State in the physical health of its citizens is a comparatively modern development. It dates from the early nineteenth century and broadly speaking may be traced to three causes. Throughout the country there was an increasing reaction against the anarchy of the Industrial Revolution. There was also the steady development of a humanitarian spirit, as evidenced by John Howard's work on prison reform, the agitation for the abolition of the slave trade, and the attempt by Sir Samuel Romilly and others to infuse some humanity and common sense into the old penal laws. To these two general trends was added a clear threat. Asiatic cholera had appeared for the first time in Europe and had spread to England.

This prompted the setting up of the Consultative Board of Health in 1831. Its advice, however, was no more useful than that of the College of Physicians at the time of the Great Plague, and it was soon superseded by the Central Board of Health, which was almost equally impotent. More important than either of these short-lived bodies was the Central Poor Law Commission which was set up in 1834, and more important than the Commissioners was their Secretary, Mr. Edwin Chadwick.

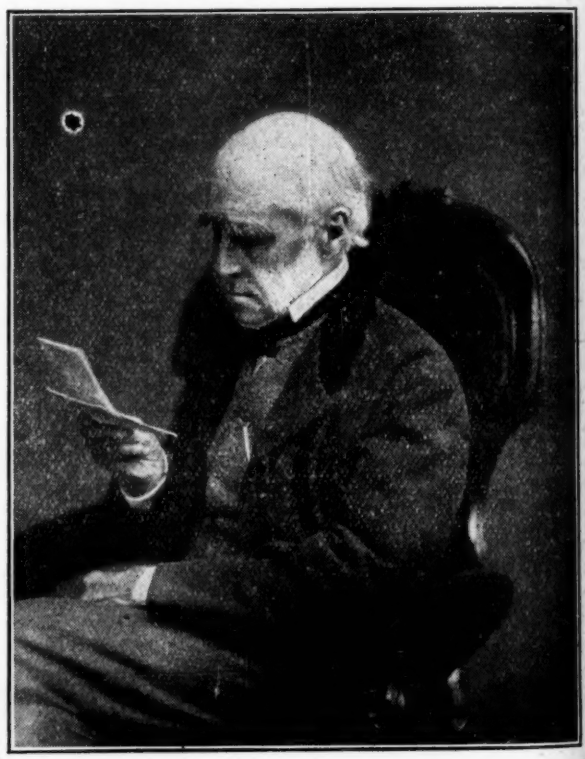
Chadwick believed that pauperism was largely connected with disease and that the Poor Law Commissioners must largely concern themselves with questions of communal health. He therefore persuaded Dr. Southwood Smith to conduct an inquiry in 1838 into an outbreak of fever in the slums of Whitechapel. The next step was a long medical report, again instigated by Chadwick and prepared by Dr. Southwood Smith, on the causes and effects of "Fever in Twenty Different Metropolitan Boroughs and Unions." There followed in 1840 an Act authorizing under the control of the Poor Law Commission free vaccination against smallpox. Two years later the Secretary to the Commissioners made his classic "General Report on the Sanitary Condition of the Labouring Population" of Great Britain. This document, of which 10,000 copies were published, forced into public prominence the part played by sickness and ill-health in the production of poverty, and insisted that the prevention of disease was one of the first duties of the State. It led to the appointment in 1843 of a Royal Commission, with the Duke of Buccleuch in the chair, to inquire into the public health generally. The Report of the Royal Commission amply confirmed what Chadwick had already made clear: that everywhere there were defective water supplies and a lack of any kind of sanitation; that the harvest of the slums was too many widows and orphans, a high infantile mortality, and a low expectation of life, so that "the loss of working ability among large classes cannot be less than 8 or 10 years." Legislation followed, and in 1848 the General Board of Health was established for a first term of five years, when what had been known as the Health of Towns Bill became the first Public Health Act.

Meanwhile the City of Liverpool had moved one step ahead of the rest of the country in creating the appointment of which the centenary is now being celebrated. Under a Private Act of 1846 Liverpool appointed Dr. William Henry Duncan, an Edinburgh graduate, as the first salaried medical officer of health in Great Britain. He took up his duties on Jan. 1, 1847, at a salary of £300 a year.

The Corporation of the City of London followed the lead given by Liverpool. Dr. John Simon became London's first medical officer of health in 1848. John Simon was later to take over the task begun by Edwin Chadwick. The General Board of Health had its statutory five years of life. At the end of this time the Government of the day was defeated on a Bill intended to renew the existence of the General Board. The very qualities which had distinguished Mr. Chadwick and made him so effective an administrator had also made him and the Board extremely unpopular.

The Board was reconstituted without Chadwick, and in 1859 a Medical Department under the Privy Council was established. This was the reaction against bureaucracy, or, rather, against the bureaucratic despotism which Chadwick was held to personify. This new Department continued to act under the skilled guidance of Sir John Simon until the formation of the Local Government Board in 1871. The Local Government Board replaced the Medical Department and the Poor Law Board and continued the functions of both as the principal central authority for public health until the creation of the Ministry of Health in 1919. Clearly, then, all the earlier developments in public

Sir John Simon (1816–1904)

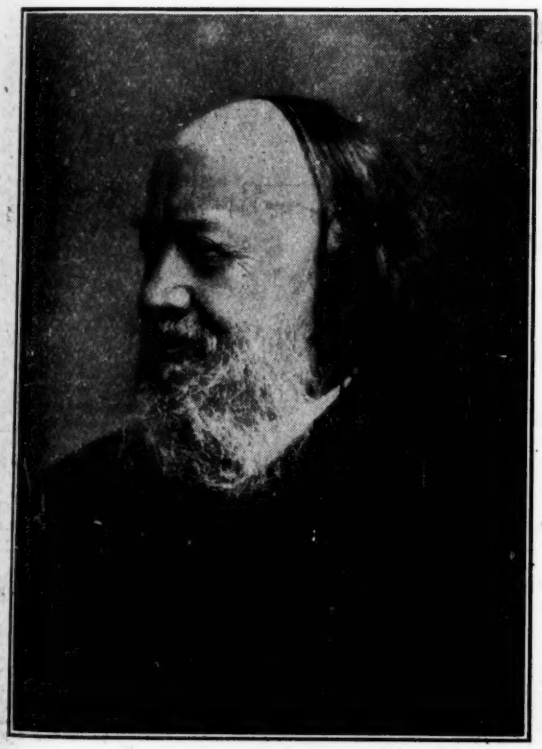


health legislation and practice in this country branched from the work of two outstanding individuals—Edwin Chadwick and John Simon.

Edwin Chadwick was born at Longsight, near Manchester, on Jan. 24, 1800, just four years after Dr. Percival and Dr. Feriar and their friends had set up the Manchester Board of Health, a voluntary society intended to deal with factory hygiene and to bring before Parliament the urgent need for reform and regulation. He was educated for the Bar, but his essays in the *Westminster Review* on different methods of applying scientific knowledge to the business of government brought him to the notice of Jeremy Bentham, who engaged him as a literary assistant and ultimately left him a handsome legacy. In 1832, the year of the great Reform Bill and the year in which Charles Hastings founded the Provincial Medical and Surgical Association, Chadwick was employed as an investigator by the Royal Commission on the Poor Law, and a year later he was made a full member of that body. With Nassau W. Senior, the Oxford Professor of Political Economy, he drafted the report which procured the passing of the Poor Law Amendment Act of 1834. His special contribution was the institution of the union as the area of administration. He favoured, however, a much more centralized system of administration than was adopted, and complained often that the reform of 1834 was badly marred by the rejection of his scheme, which involved the management of poor law relief by salaried officers centrally controlled, with the board of guardians acting only as inspectors. The country and the Government rejected Chadwick in 1854. Recognition of the value of his work came only towards the end of his long life. He was made K.C.B. in 1889, and he died at East Sheen, Surrey, on July 6, 1890. He had given public health administration a series of clear-cut objectives by showing how the census and bills of mortality could be used to diagnose those public ailments which required for their control various public health measures.

Sir John Simon was born in London on Oct. 10, 1816. In the spring of 1844 he was awarded the first Astley Cooper prize for a physiological essay on the thymus, and the following year he was elected F.R.S. He was appointed lecturer on pathology at St. Thomas's Hospital and subsequently became a surgeon on its staff. He published many clinical surgical lectures and might easily have become well known as a surgeon had he not elected to serve sanitary science in the City of London in 1848. His most notable book was *English Sanitary Institutions*, which among other things pointed out that before the passing of the Medical Act of 1858 there were "Twenty-one disconnected corporate Authorities within the United Kingdom . . . using their heterogeneous credentials of qualifications (more or less) for responsibilities in Medicine."

Sir Edwin Chadwick (1800–1890)



Thomas Southwood Smith (1788–1861)

It was Simon who described preventive medicine as "the province where Medicine joins hands with Common Sense" and who most appreciated the work of Chadwick in establishing preventive medicine in Great Britain. Sir Edwin Chadwick, he wrote, "was the first to awaken our statesmen of those times to the duty of caring for the Public Health, and the first to bring Health under the protection of the Law."

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NUTRITION IN VIENNA

Dr. HARVEY S. COLLINS, an American nutrition expert, addressed an Unrra conference in London recently on conditions in Vienna. On arrival there in April, 1946, he found the people listless, but in the following June their spirits appeared to be greatly improved, a circumstance which seemed inconsistent with the official rations and the known decrease in food obtainable off the ration. He therefore made a survey of a statistically representative sample of the community, selected at random. Some 10,000 people in all consumer groups were invited to come for medical examination, and some 7,500 did so, while visits were made to the homes of those who did not attend to find out whether they were prevented by illness; 2,000 dietary histories were taken. The results of the medical survey showed retarded growth in children, particularly in the 7–13 age-group. Adults over 40 were under weight, the degree of deterioration increasing with age. On the other hand, there was not much evidence of malnutrition. Oedema of the ankles was present in a number of individuals, but in all but 0.3% could be accounted for by varicose veins, heart disease, or other ailments. In the 0.3% the condition was consistent, on medical history and examination, with protein or calorie deficiency, and was the so-called "famine oedema." Clinical evidence of deficiency of vitamin B complex was rare: 0.8% showed signs suggestive of riboflavin deficiency. Scurvy was not found in any case, but vitamin C deficiency was suggested in 0.62%, and vitamin A deficiency in 0.71%. There was little evidence of the vitamin D deficiency in young children which was so marked after the First World War. The improvement was presumably due to preventive measures in the form of distribution of cod-liver oil and other vitamin sources and preferential milk distribution.

Dr. Collins summed up the state of nutritional health of the people of Vienna in the summer and early autumn of 1946 as maintenance at a level below normal but not at such a low level as would constitute actual nutritional disease. The allocation of food to the city had been the smallest in any large European community during 1946. In spite of this, the medical catastrophe which might have been expected had not happened, probably because the average citizen had managed to secure extra food through channels outside official distribution, such as factory meals of more value than the coupons surrendered, voluntary society contributions, and produce obtained from gardens or farmers, or from the black market. These sources might be expected to diminish during the winter, but in part this would be compensated by a recent increase in the ration to 1,550 calories. The maintenance of this standard, with the winding up of Unrra, would be the responsibility of the Austrian Government and the Occupying Powers.

FINAL RESULTS OF THE PLEBISCITE

The following tables show the results of the plebiscite up to and including Jan. 6, 1947

Table I.—Civilian Practitioners Only, showing voting in categories under years qualified

Description of Category	0–7 Years						8–14 Years						15–21 Years					
	England and Wales		Scotland and N. Ireland		Group Totals		England and Wales		Scotland and N. Ireland		Group Totals		England and Wales		Scotland and N Ireland		Group Totals	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Consultant or specialist	72	74	20	11	92	85	427	299	55	43	482	342	463	514	42	72	505	586
General practitioner principal	327	532	68	112	395	644	818	1,458	114	181	932	1,639	1,193	2,268	173	251	1,366	2,519
General practitioner assistant	433	640	103	142	536	782	231	314	28	48	259	362	75	95	12	10	87	105
Whole-time vol. hospital	1,324	1,090	198	214	1,522	1,304	388	184	71	42	459	226	49	22	5	4	54	26
Whole-time local auth. gen. hosp.	516	351	76	47	592	398	240	82	20	9	260	91	95	30	3	4	98	34
Whole-time local auth. spec. hosp.	234	127	51	32	285	159	177	70	26	14	203	84	129	39	18	4	147	43
Whole-time public health service	121	51	21	13	142	64	238	120	37	23	275	143	277	152	44	27	321	179
Whole-time government service	92	39	26	15	118	54	94	29	21	9	115	38	75	32	14	4	89	36
Whole-time teacher	63	31	19	11	82	42	60	31	18	3	78	34	52	15	10	12	62	27
Whole-time research	91	25	12	11	103	36	48	11	6	1	54	12	16	3	2	1	18	4
Whole-time non-govern. post	29	27	3	4	32	31	41	39	7	6	48	45	60	55	0	4	60	59
Medically qualified dental surg.	6	23	—	3	6	26	12	22	5	9	17	31	14	34	3	2	17	36
Retired	10	18	6	5	16	23	26	25	4	3	30	28	42	42	8	14	50	56
Unclassified	505	344	127	100	632	444	210	174	41	30	251	204	98	95	10	16	108	111
Totals	3,823	3,372	730	720	4,553	4,092	3,010	2,858	453	421	3,463	3,279	2,638	3,396	344	425	2,982	3,821

Table I (continued)

Description of Category	22 Years and Over						Period Not Stated						Grand Total Yes	Grand Total No	Grand Total Yes and No
	England and Wales		Scotland and N. Ireland		Group Totals		England and Wales		Scotland and N. Ireland		Group Totals				
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No			
Consultant or specialist	917	1,221	100	209	1,017	1,430	28	32	7	4	35	36	2,131	2,479	4,610
General practitioner principal	2,329	4,505	374	609	2,703	5,114	77	91	6	17	83	108	5,479	10,024	15,503
General practitioner assistant	72	120	12	18	84	138	9	12	3	5	12	17	978	1,404	2,382
Whole-time vol. hospital	43	28	9	10	52	38	23	19	6	7	29	26	2,116	1,620	3,736
Whole-time local auth. gen. hosp.	83	33	2	1	85	34	15	8	4	—	19	8	1,054	565	1,619
Whole-time local auth. spec. hosp.	163	67	16	7	179	74	7	4	6	2	13	6	827	366	1,193
Whole-time public health service	456	328	64	41	520	369	33	9	1	1	34	10	1,292	765	2,057
Whole-time government service	170	116	30	13	200	129	9	5	5	1	14	6	536	263	799
Whole-time teacher	61	33	21	12	82	45	6	2	2	3	8	5	312	153	465
Whole-time research	32	25	3	1	35	26	4	1	1	—	5	1	215	79	294
Whole-time non-govern. post	77	78	9	13	86	91	6	1	—	1	6	2	232	228	460
Medically qualified dental surg.	28	80	6	24	34	104	5	2	—	—	5	2	79	199	278
Retired	1,032	1,634	123	232	1,155	1,866	26	44	14	9	40	53	1,291	2,026	3,317
Unclassified	166	275	23	41	189	316	17	21	2	5	19	26	1,199	1,101	2,300
Totals	5,629	8,543	792	1,231	6,421	9,774	265	251	57	55	322	306	17,741	21,272	39,013

Table II.—Civilian Practitioners Only, showing voting in categories under countries

Description of Category	England and Wales		Scotland		Northern Ireland		Category Totals		Grand Total Replies Yes and No
	Yes	No	Yes	No	Yes	No	Yes	No	
Consultant or specialist	1,907	2,140	201	283	23	56	2,131	2,479	4,610
General practitioner principal	4,744	8,854	587	972	148	198	5,479	10,024	15,503
General practitioner assistant	820	1,181	135	190	23	33	978	1,404	2,382
Whole-time vol. hospital	1,827	1,343	248	241	41	36	2,116	1,620	3,736
Whole-time local auth. gen. hosp.	949	504	94	48	11	13	1,054	565	1,619
Whole-time local auth. spec. hosp.	710	307	95	53	22	6	827	366	1,193
Whole-time public health service	1,125	660	146	90	21	15	1,292	765	2,057
Whole-time government service	440	221	85	38	11	4	536	263	799
Whole-time teacher	242	112	66	35	4	6	312	153	465
Whole-time research	191	65	23	11	1	3	215	79	294
Whole-time non-govern. post	213	200	18	23	1	5	232	228	460
Medically qualified dental surg.	65	161	14	36	—	2	79	199	278
Retired	1,136	1,763	140	240	15	23	1,291	2,026	3,317
Unclassified	996	909	171	174	32	18	1,199	1,101	2,300
Civilian totals	15,365	18,420	2,023	2,434	353	418	17,741	21,272	39,013

Table III.—Civilian Practitioners Only: Some important percentages

	Total Voting	Voting Yes	Voting No	Not Voting	Of those who Voted	
					Voting Yes	Voting No
All Civilian Categories						
Great Britain	81	37	44	19	45½	54½
England and Wales only	83	38	45	17	45½	54½
Groups 1 to 4 (Consultant or specialist. General practitioner principals and Assistants. Whole-time vol. hospital)						
Great Britain	92	37½	54½	8	41	59
England and Wales only	94	38	55	7	41	59
Groups 2 and 3 only (General practitioner principals and assistants)						
Great Britain	88	32	56	12	36	64
England and Wales only	90	32	58	10	35½	64½

Table IV.—Services Only, showing voting in categories under years qualified

Description of Category	0–7 Years		8–14 Years		15–21 Years		22 Years and Over		Period Not Stated		Grand Totals		Grand Total Yes and No
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
Services—Perm. commission	36	31	126	101	89	69	219	116	4	6	474	323	797
Services—Temp. comm. spec.	132	47	113	36	35	7	15	9	5	2	300	101	401
Services—Temp. comm. graded spec. ..	164	115	16	7	3	—	—	1	—	—	187	123	310
Services—Temp. comm. gen. duty officer	633	768	26	22	19	10	94	14	13	12	776	826	1,602
Totals	965	961	281	166	137	86	328	140	26	20	1,737	1,373	3,110

Table IVa.—Services Only, showing voting in categories

Description of Category	Yes	No	Grand Total Yes and No
Services—Perm. commission	474	323	797
Services—Temp. comm. spec.	300	101	401
Services—Temp. comm. graded spec. ..	187	123	310
Services—Temp. comm. gen. duty officer ..	776	826	1,602
Services totals	1,737	1,373	3,110

Services Only: Some important percentages

Total Voting	38%
Voting Yes	21%
Voting No	17%
Not Voting	62%
Of Those who Voted—	
Voting Yes	56%
Voting No	44%

Overall, Civilian and Services Practitioners, of all those who voted (42,123) 46% voted Yes and 54% voted No.

MEDICAL NEW YEAR HONOURS

The names of the following members of the medical profession were included in a New Year Honours List published in the *London Gazette* on Jan. 1:

Knighthood

Major-Gen. HUGH CLIVE BUCKLEY, C.S.I., F.R.C.S.Ed., I.M.S. Principal (retired), Medical College, Agra, United Provinces.

CHARLES ERNEST HERCUS, D.S.O., O.B.E., M.D. Professor of Bacteriology and Preventive Medicine, University of Otago, and Dean of the Medical School.

EARDLEY LANCELOT HOLLAND, M.D., F.R.C.P., F.R.C.S. Past President of the Royal College of Obstetricians and Gynaecologists.

C.B. (Military Division)

Surgeon Rear-Admiral HERBERT RICHARD BARNES HULL, M.R.C.S., L.R.C.P., R.N. Honorary Surgeon to the King.

Major-Gen. EVELYN ALEXANDER SUTTON, C.B.E., *M.C.*, M.R.C.S., L.R.C.P., late R.A.M.C.

C.M.G.

PATRICK ALFRED BUXTON, F.R.S., M.R.C.S., L.R.C.P. Professor of Entomology in the University of London and Director of the Department of Entomology, London School of Hygiene and Tropical Medicine.

MELVILLE DOUGLAS MACKENZIE, M.D. Principal Medical Officer in charge of epidemiology and international health, Ministry of Health.

ALBERT RAY SOUTHWOOD, M.D., M.S. Chairman, Central Board of Health, State of South Australia.

C.I.E.

Major FREDERICK AUGUSTUS BERRILL SHEPPARD, O.B.E., F.R.C.S.Ed., I.M.S. Surgeon, Government General Hospital, and Professor of Surgery, Medical College, Madras.

Lieut.-Col. WILLIAM JOSEPH WEBSTER, *M.C.*, M.D., I.M.S. Senior Assistant Director, Central Research Institute, Kasauli, and Officer-in-Charge, Serum and Vaccine Section.

C.V.O.

DANIEL THOMAS DAVIES, M.D., F.R.C.P. Physician to H.M. Household.

FRANK ANDERSON JULER, F.R.C.S. Surgeon Oculist to H.M. Household.

C.B.E. (Military Division)

Acting Air Commodore HENRY OSMOND CLARKE, F.R.C.S., R.A.F.V.R. Consultant in Orthopaedic Surgery, R.A.F.

C.B.E. (Civil Division)

ELDRED CURWEN BRAITHWAITE, O.B.E., M.S.Durh., F.R.C.S.Ed. Colonial Medical Service. Senior Specialist, Nigeria.

JAMES HARDIE-NEIL, D.S.O., M.B., Ch.B. Medical practitioner, Auckland, New Zealand.

O.B.E. (Military Division)

Lieut.-Col. (Temporary) ERIC FRANCIS EDSON, M.B., Ch.B., R.A.M.C.

Acting Squad.-Ldr. ROBERT ALLISON MOOREHEAD, M.B., B.Ch., R.A.F.V.R.

Major ERNEST SOYSA, M.B., B.S., Ceylon Medical Corps.

O.B.E. (Civil Division)

FREDERICK AUGUSTUS L'ESTRANGE BURGES, M.B.E., M.R.C.S., L.R.C.P. Post Office Medical Officer for the Hockley and Handsworth districts of Birmingham.

PERCIVAL PASLEY COLE, F.R.C.S. Senior Surgeon, Dreadnought Seamen's Hospital, Greenwich.

JOHN WILLIAM HAWKSLEY GRICE, M.R.C.S., L.R.C.P. British subject resident in China.

CURTIS DANIEL JOHNSTON, M.D., C.M. Medical Officer, Black River District, Jamaica.

PATRICK WILLIAM ROBERTSON PETRIE, M.B., Ch.B. For medical services in the Aden Protectorate.

PIERRE FRANÇOIS JOSEPH LOUIS RATHIER DU VERGÉ, *M.C.*, M.R.C.S., L.R.C.P. Medical Superintendent, Victoria Hospital, Mauritius.

JAMES GRAHAM WILLMORE, M.D., C.M. Lately Principal Medical Officer, Ministry of Pensions.

M.B.E. (Military Division)

Major JOHN HENRY COWDREY, N.Z.M.C.

Major (Acting) ROBERT MACFIE MARQUIS, M.B., Ch.B., R.A.M.C.

M.B.E. (Civil Division)

ISAAC BOATENG ASAFU ADJAYE, M.R.C.S., L.R.C.P. For political and social services in the Gold Coast.

ALEXANDER SMAILL FRATER, M.B., B.S. For medical and public services in the New Hebrides.

LEON GILLIS, M.Ch.Orth., F.R.C.S. Senior Surgeon, Ministry of Pensions.

CECIL VERNON JUMEAUX, L.M.S., Government Medical Service. For services during the enemy occupation of Malaya.

CHARLES STUART OGILVY, L.R.C.P.&S.Ed., L.R.F.P.S.Glas. Civil Medical Practitioner, Military Detention Barracks, Sowerby Bridge.

HUGH WANDS, M.B., Ch.B. Medical Officer, Sandakan, North Borneo. For services during internment.

Kaiser-i-Hind Gold Medal

MARGARET GILLESPIE MCMILLAN, M.B., Ch.B. In charge of Women's Mission Hospital, Ajmer.

An interesting account of Kislovodsk—one of the spa towns in the Russian Caucasus—is given by Alexander Werth in the *Manchester Guardian* of Dec. 31. The sanatoria "are as clean and efficient as anything in Switzerland—and even duller," and some are "almost unbelievably luxurious." The equipment of all kinds seems to be excellent. The spa is dealing with 100,000 people a year—from patients with a variety of ailments to those who simply need a rest—as compared with 150,000 in 1939. There are also a number of men seriously wounded in the war still receiving treatment there. He draws attention to the question of how people are selected for treatment at the spas, for the Government attaches great importance to what we should call rehabilitation. Medical boards of Government departments and trade unions select suitable patients not only from the point of view of whether their health will benefit but also regarding their particular value in their jobs. Thus the proportion of directors and important technicians is relatively much higher than that of ordinary workers. Stakhanovites also get preference.

NATIONAL HEALTH SERVICE ACT

PRESIDENTS OF ROYAL COLLEGES AND MR. BEVAN

We print below correspondence between the Presidents of the three Royal Colleges and the Minister of Health on the National Health Service Act.

Jan. 2, 1947.

My dear Minister,

The opposition of a substantial part of the medical profession to any renewal of discussions with the Government regarding the National Health Service is causing us concern. We fear that it may lead to an impasse, and we wish to do what we can to prevent such an impasse arising.

We recognize that certain of the principles of the new Service are incorporated in the Act, but there are other issues of importance which will be determined by regulations, and the form of the Service will depend to a great extent upon what the regulations contain. We feel that there is an opportunity in framing the regulations to meet several of the objections of the profession. Moreover, the implications of some of the proposals for the new Service are not clear to the profession and clarification of these points would be helpful. We hope, therefore, that you will clarify for us any of the points referred to later in this letter on which there may be misunderstanding and that you may be able to give us an assurance that you will endeavour, within the framework of the Act, to meet the views which are held strongly by many practitioners.

Our first point is a general one. We believe that behind the opposition of members of the profession is the fear that to enter into discussions would compromise their position by implying their approval and acceptance of the main provisions of the Act.

In the general practitioner part of the Service there are three points on which we think that some statement from you would be helpful.

The first is the method of remuneration. This is left to be dealt with by regulations, and is therefore presumably open for discussion; but you have made clear your preference for a basic salary, apparently making it generally applicable because of your difficulties in particular cases. There is general agreement that there are circumstances in which a basic salary or a guaranteed minimum may be necessary, but this is not regarded as justifying a universal basic salary. Cannot the circumstances in which a basic salary is appropriate be left open for discussion?

Secondly, a large element in the opposition of some practitioners is the fact that if the Tribunal recommend the expulsion of a practitioner from the Service, his appeal is to be judged by the Minister who has appointed two of the three members of the Tribunal. Neither the words nor the spirit of the Act prevent you from agreeing to seek the advice of the General Medical Council on every such appeal.

In the third place, there is a widespread and not unfounded fear that there will be serious interference with the liberty of movement of general practitioners. It would be useful if you would explain how you anticipate that this part of the Act will work in practice, with particular reference to partnerships and groups.

Among specialists there are also certain points giving rise to anxiety. In the background, just as in the case of the general practitioners, there is the general issue of the freedom of the profession and the availability to the people of independent medical advice. The whole profession regard it as essential that independent practice should continue and that independent practitioners should have the necessary facilities for the treatment of their patients. We were therefore glad to receive from the Lord Chancellor and from yourself assurances that independent practitioners would be free to remain in attendance on their patients when admitted to the private wings of hospitals, and also to learn that consultants holding honorary positions on the staffs of hospitals would be at liberty to use all the facilities provided. You know our anxiety to induce specialists to do practically all their work within the precincts of hospitals; it is because of this anxiety that we stress these points. Any information you can give us on the practical operation of the consultant and specialist part of the Service will be helpful.

We hope you will forgive us for intervening, but we feel that the importance of the cause justifies this step.

Yours sincerely,

MORAN,
President, Royal College of Physicians
ALFRED WEBB-JOHNSON,
President, Royal College of Surgeons
W. GILLIATT,
President, Royal College of Obstetricians and Gynaecologists.

MR. BEVAN'S REPLY

Jan. 6, 1947.

My dear Presidents,

Thank you for your letter. I agree with you that an impasse between the Government and the medical profession would be a grave misfortune. I believe that some, at least, of the opposition on the part of the profession to discussions is due to a misunderstanding of the proposals, and I am glad to answer any questions if by so doing I can make clear what is in doubt.

You say that some members of the profession fear that discussions would compromise their position by implying their approval of the main provisions of the Act. There is no ground for such a fear. Every doctor will have to decide for himself when the proper time comes whether or not he should take part in the new Service, and the profession as a whole will be free to determine their views on the Service when they know what it is to be. The resumption of discussions now would not prejudice these eventual decisions.

As you rightly point out, the ultimate form of the Service will largely depend on regulations which have now to be framed. The issue for the medical profession to-day is not, therefore, whether they will join a service the final shape of which cannot yet be known, but whether they will accept or forgo the opportunity to influence its shaping. I want to have their help and advice in this task, and I can certainly assure you that, if discussions take place, I shall endeavour to meet any views of the profession which do not conflict with the principles of the Act.

Let me here make one point. It has been said that I have not consulted the profession and that I have been unwilling to negotiate with them. That is not so. While the Bill was in preparation and before Parliament, discussions with the medical profession as with other interests were necessarily conditioned: I could not publish proposals before they were submitted to Parliament, and I could not pledge Parliament in advance to their acceptance. Nevertheless I and my officers had full discussions with the Negotiating Committee and were throughout in close touch with the representatives of the profession. Thus the Government were at all stages fully informed of the views of the profession, and the original proposals were modified in many important respects to meet those views. Now the position is different. The Bill is law and within its terms I can negotiate freely.

I turn now to the specific points raised in your letter. You ask three questions about the general practitioner part of the Service:

(i) The Method of Remuneration

Clearly both the method and rates of remuneration are open to discussion since they are matters which are not defined in the Act but have to be determined by regulation. I believe, however, that the Government's proposals have been misinterpreted. The Government have accepted the view of the profession that remuneration should be based substantially on capitation fees and have thus rejected the conception of a full salaried Service. I have had it in mind that the remuneration of all general practitioners should include an element of salary, but that the element should be small. As you yourselves recognize, there are circumstances in which a guaranteed minimum is necessary, and my own view has been that administratively the most convenient method of achieving this object is to make the basic element universal. But this is essentially a matter which I should like to discuss with the profession.

(ii) The Tribunal

Here again there is, I think, some misunderstanding. The question to be decided by the Tribunal is whether the retention of a doctor in the medical list would be prejudicial to the efficiency of the Service, and I regard the setting-up of an independent tribunal as an addition to the safeguards which have prevailed under the National Health Insurance for the last 35 years. The function of the General Medical Council is to determine whether a doctor has been guilty of unprofessional conduct, and that remains unaffected. Moreover, a doctor, like any other citizen, has his rights at common law enforceable by the courts, and these also remain unaffected. It is not true, as has been so widely said, that doctors in the new Service will be civil servants On the contrary, their full civic rights are preserved unimpaired. I will gladly discuss with representatives of the profession the procedure to be followed before deciding an appeal to me from a decision of the Tribunal to remove a practitioner's name from the list, with a view to providing any additional protection possible within the framework of the Act.

(iii) The Fear of Interference with the Liberty of Movement of General Practitioners

There is no power to direct a doctor to go anywhere or do anything. There is a provision in the Act the sole object of which is to avoid an undue concentration of doctors in any one area. Under this provision a doctor who wishes to practise in the public service in a new area will be required to obtain the approval of a central committee of nine, seven of whom will be medical practitioners appointed after consultation with the medical profession. Normally, however, he will make his arrangements locally through the local executive council, the approval of the central committee being formal. The details of how this will work have still to be discussed and settled, I hope in consultation with the medical profession, but I can say that what I have in mind as the everyday procedure is that in the case of a partnership or group of doctors the partners or members of the group will have the initiative in selecting a doctor to fill an approved vacancy, and normally their selection will be confirmed as a matter of course. Similarly, in the case of a single-handed practice the initiative in selecting the incomer will lie with the local medical committee. You know, of course, that all doctors who, when the Act comes into operation, are already in practice as principals will have an absolute right to enter the new Service in the areas in which they are practising.

You mention finally in your letter the position of specialists and stress the importance to them of ensuring the freedom of the profession and the continuance of independent practice. It is a basic principle of the new Service that there should be no interference with the clinical freedom of any doctor—specialist or general practitioner. It is also a principle of the Service that independent specialist practice should be free to continue—specialists being free to remain outside the Service or to join it either whole or part-time, and, if they wish, to be on the staff of a hospital in an honorary capacity. In this way the position of consultants desiring to continue their association with hospitals after the age of retirement and of consultants who do not wish to accept more than a limited responsibility will be met. In the case of a consultant on a hospital staff—and I find it difficult to conceive of a consultant not on a hospital staff—he will be able to treat his private patients in the private beds of his own or other hospitals, subject to availability, and I recognize with you the need for both public and private accommodation, as indeed I have made clear in Parliament on a number of occasions.

The details of all these arrangements will obviously need to be discussed with the profession, but I am confident that round a table we shall be able to make satisfactory arrangements which will encourage specialists to work within the precincts of hospitals—a point to which, like you, I attach the utmost importance.

If you think it desirable I have no objection to the publication of this correspondence.

Yours sincerely,

ANEURIN BEVAN.

HEALTH CONDITIONS IN THE FACTORIES

A Transitional Year

The almost complete mobilization for war was relaxed in 1945, a year of dramatic change not only in military and political history but in the industrial life of Great Britain. The process of reconverting industry to the normal peacetime pattern was begun. If swords were not exactly turned into ploughshares, factories turned from producing cannon shells to agricultural implements, from machine-gun parts to roller skates and carpet-sweepers, from parachutes to women's skirts, from landing-craft to prefabricated houses. Such a reversal involved not only vast mechanical readjustments but equally vast and far more complicated human ones for the six million people who continued in factory employment.

The report of H.M. Inspector of Factories for 1945[1] is therefore of unusual interest. Some comparison is made so far as that is possible—which is not very far—of the industrial conditions of the second world war with those of the first. In 1939–45 safety standards were more generally recognized, methods of dust and fume removal were improved, increased mechanization brought about a lessening of fatigue and, in some respects, a lessening of hazard, and amenities of a kind undreamed of in the earlier war were provided. Of the relative incidence of occupational diseases, poisoning, and gassing it is impossible to get a true picture until the extent of the production in the recent war is assessed. The average annual number of cases of carbon monoxide poisoning and poisoning by nitrous fumes was three times greater in 1940–5 than it had been in 1917–18; but in spite of the increased number of cases the fatalities were fewer. For every case of toxic jaundice in the recent war there were more than six cases in the earlier war, and for every death there were seven deaths.

Accident Prevention

The number of reported accidents (meaning an accident which is either fatal or disables the workman for more than three days) was just upon 240,000 in 1945, the lowest figure since 1940. Of these accidents 851 were fatal. The general accident rate (37 for every 1,000 persons employed) remains considerably higher than it was before the war, especially amongst boys under 18 (54 per thousand). At the other end of the scale a large number of accidents—generally falls on the level—are sustained by old people who have remained on in factory work. Shipbuilding is an accident-prone industry; 17,667 people were injured in shipyards in 1945. Electrical accidents are gratifyingly few. Of 178 known electrical fatalities in 1945, only 31 were in premises under the Factories Acts. Factory accidents are at a high level in the metal, engineering, and machinery trades, while the aircraft industry adds another 10,000 of its own. Factory accidents at their present level mean a loss to industry of at least 20,000 workers throughout the year. The appointment of safety officers and committees in factories is attended usually by a reduction in the frequency rate.

General Factory Hygiene

A greater appreciation on the part of both managements and workers of the importance of heating in relation to good working conditions is reported; perhaps the stringency of the fuel position has now put the clock back. One of the most difficult problems with which the Factory Department is concerned is the removal of dust and fumes by localized ventilation. A general raising of the standard of ventilation has followed the removal of wartime black-out, but the factory worker, like other Englishmen, abhors a draught. In larger factories air-conditioning plants are coming increasingly into use, with good results, but trouble from draughts may still arise unless the openings through which the conditioned air is delivered are suitably designed and located. More attention is being given to the quality of lighting as distinct from its intensity—that is to say, to distribution, direction, diffusion, colour, avoidance of glare and of excessive contrasts and shadows. Yet greater advantage might be taken of recent advances in illumination technique.

[1] *Annual Report of the Chief Inspector of Factories for the Year 1945.* Cmd. 6992. (London: H.M. Stationery Office. 2s. net.)

It is stated that industries are becoming more responsive to new ideas, resulting in more pleasant and therefore generally more healthy working conditions. A great transformation has been wrought by the coming of the canteen. From being a rarity the canteen is now a commonplace in factories of any size. In 1945 there were 11,700 factory canteens, and a few hundred others on docks and building sites, all serving hot meals.

Dr. E. R. A. Merewether, senior medical inspector, who contributes a section on industrial health, deals with the occasional criticism that the Medical Branch of the Department pays too much attention to specific occupational risks, to the neglect of measures of general welfare. After all, what are the numbers of cases of industrial disease compared with deaths from pneumonia or with absenteeism caused by the common cold? But he points out that the Factories Act is largely aimed at preventing the common ailments, and he instances the provisions as to cleanliness, avoidance of overcrowding, ventilation, washing facilities, protective clothing, and the like. The number of colds prevented, the lowering of the incidence of rheumatic diseases, the amount of positive health secured by such means, cannot be represented in statistics.

Poisons and Fumes

During the year 45 cases of lead poisoning were reported, 2 of which were fatal. It is useful to glance back at earlier years:

	Cases	Deaths
1900.....	1,058	38
1910.....	505	38
1920.....	289	44
1930.....	265	32
1940.....	108	6

One-third of the 1945 cases were in workers engaged in the manufacture and repair of electric accumulators. The dangers of such work are insufficiently appreciated. Only 5 cases of mercurial poisoning were reported. One death occurred in the manufacture of ethyl iodide and ethyl mercuric chloride, a chemical for agricultural use. In the only other considerable group of cases of chemical poisoning (31 cases) aniline was the responsible agent; these cases were among people engaged in the manufacture of T.N.T. and of nitro and amido compounds of benzene and its homologues. All the 6 cases of toxic jaundice (4 of them women) were due to exposure to T.N.T.

For the first time there was no case of anthrax arising from wool. Five of the 7 cases reported were workers in hides and skins. Penicillin was used in 6 of the cases, but there is not sufficient evidence as yet to show its relative merits as the treatment of choice in this condition. Epitheliomatous ulceration accounted for 215 cases (all males), 9 of which were fatal. Pitch or tar was the agent in 176 of the cases. There were 94 cases of chrome ulceration, mostly among workers engaged in chromium plating.

The number of cases of carbon monoxide gassing—218, with 18 deaths—shows no lowering on the average of the past six years. The continued high level is ascribed to the large use of power gas, which accounted for 82 of the cases. Instances are given of wrong treatment for gas-poisoning, such as the indiscriminate use of aspirin or the mistaken zeal of rescuers in walking the semiconscious victim up and down the factory yard in the fresh air. It is remarked that often the rescuers suffer more severely than the rescued, perhaps because of the physical strain involved. The fact that while there is life there is hope is especially true of carbon monoxide poisoning; one case recovered after 29 and another after 24 hours' unconsciousness.

Carbon dioxide accounted for 1 case of poisoning, sulphuretted hydrogen for 6 cases, sulphur dioxide for 12, chlorine for 47, nitrous fumes for 29, all without a fatality. One death occurred from ammonia gas poisoning, and one from benzol. Four cases of anoxaemia are related, 3 of them fatal, to illustrate the risk from lack of oxygen in confined spaces. Two of the deaths occurred inside a ship's boiler, and the other in a coffer dam, 38 ft. below deck level. Two recent fatalities, one in a factory, make it desirable to call attention to the dangers of di-nitro-ortho-cresol, which is now in demand for its fungicidal and insecticidal properties. This chemical exerts its toxic action in industrial operations when it is inhaled in dust or fumes or absorbed through the skin—and it is, of course, poisonous when taken by mouth.

Other Industrial Diseases

The reported deaths from silicosis numbered 508 (323 of them in coal mining), and the deaths from pneumoconiosis, asbestosis, and other fibroses of the lung brought the grand total in England and Wales to 1,133, a figure higher than in any year since 1940. In 902 cases of deaths from silicosis investigated during recent years the average age at death was found to be 57.6 years and the average period of employment in the pottery, sandstone, metal-grinding or other industry concerned (excluding coal mining), 34 years; 943 other deaths from silicosis with tuberculosis were also investigated, and here the average age at death and the average period in employment were lower by three or four years.

The idea that certain dusts have a protective value in pneumoconiosis was first put forward in 1916, and fresh interest has lately been aroused by the publication by three Canadian workers of the results of treatment of a small number of silicotics by inhalation of aluminium powder. On this the report says:

"... There is a grave danger that the proved methods of dust suppression and control may be neglected on the supposition that all that is necessary to prevent silicosis is to ensure that a sufficient amount of aluminium or alumina dust is inhaled at the same time as the siliceous dust.... At the best it [aluminium dust] can only become an ancillary aid in the prevention of silicosis, since the mass effects of inhaling dust in gross concentrations, whatever its nature, cannot be neglected."

There was a decrease of over 2,000 in the number of dermatitis cases voluntarily reported (5,996). "Copra itch," which has been associated in the past with dockers, affected 8 young women engaged in cleaning and repairing sacks which had been used for copra. There are grounds for thinking that "copra itch" may be an allergic reaction to a mite-containing dust or that it may be more directly initiated by the mites during some phase of the life cycle; the same applies to cheese and grain "itches."

Blood examinations have been made on over 500 x-ray workers and workers with radioactive materials, who are described as "luminizers." Anaemia was found to be present in about 10% of the luminizers examined, but in at least a quarter of these it could be accounted for by circumstances not connected with employment. Slight skin and blood changes were noted in a few cases. A warning is given against the wearing by luminizers of respirators consisting of cotton gauze material backed by an inner layer of lint. All the masks examined were found to be contaminated with radioactive material, and the use of such masks for work with radioactive materials must be discouraged because of this risk, which is accentuated by handling the mask, for example, to facilitate conversation.

At the close of 1945 the number of whole-time works medical officers was 143, covering 242 factories, and 903 part-time officers gave substantial service in 1,337 factories. The whole-time officers have decreased slightly following on the change-over to peace-time production, but there are indications that their numbers are rising again. The work of the examining surgeons is the subject of appreciative comment. In 1945 they examined 235,000 young persons for certificates of fitness for employment, and certified 231,000 of them. The principal cause for rejection was pediculosis (1,986 cases), the "runner-up" being diseases of the skin (496). Rheumatism was the cause of rejection of only 55, and diseases of the lungs of only 129.

A relatively new feature of the work of the department is the setting-up of three expert advisory panels, concerned respectively with dermatitis, ophthalmology, and radiology. They are composed of consultant physicians and surgeons basically engaged in these branches of work, with other experts in the allied sciences. With the co-operation of industrial concerns they have been able to appraise occupational health problems from their several backgrounds and to give the answer to many questions concerning specific lesions, their causes, and means of prevention.

Correspondence

Foretaste of Control?

The following letter was sent to Sir Ernest Graham-Little. We print it by permission of him and the author.

DEAR SIR ERNEST GRAHAM-LITTLE,

I am taking the liberty of writing to you as my university representative in Parliament because I wish you to know of attempts at bureaucratic control by medical advisers to the Ministry of Food interfering between a patient and his doctor. The facts in this particular case are as follows. About two months ago I wrote to the local Food Office (Birmingham), in accordance with the Ministry of Food's regulations (MED.1, p. 7), "A detailed medical statement, giving full particulars of the applicant's condition and the medical reasons why extra rations are considered necessary. Such a medical statement will be treated as strictly confidential." As a result of this, my patient was granted two pints of milk a day.

On Dec. 12 I received from the Food Executive Officer a copy of a letter to him from the Divisional Food Office, London, which reads as under:

COPY.
MD/RA/588

Ministry of Food,
Divisional Food Office.
Dec. 6, 1946.

Dear Sir,

I refer to your letter of Nov. 25 regarding application from Mr. ——, of ————, for permanent priority of 14 pints of milk weekly.

Our medical advisers point out that Mr. —— is entitled to 1 pint of milk per day as a sufferer from chronic colitis and is classed as 2.D of MED.2. Our advisers are of the opinion the pernicious anaemia is completely controllable by modern therapy, and further that the achlorhydria can also be effectively treated. They therefore cannot recommend that any additional priority should be granted other than 1 pint of milk daily in respect of his colitis.

The medical certificate enclosed with your letter is returned herewith.

Yours faithfully,
(sgd.) ————,
Assistant Divisional Food Officer.

To:
The Food Executive Officer,
Birmingham, C.B.

The reasons for my advising two pints of milk a day were that besides suffering from chronic colitis, (?) diverticulosis (which, incidentally, entitled him to one pint of milk), there is almost complete lack of gastric and upper intestinal digestion, due to total achlorhydria. Therefore the only food he can take is milk, glucose, cheese, eggs when available, finely minced meat, or fish in very small quantities, and sieved vegetables. I give you below an example of a typical day's meals:

Breakfast—milk and fine porridge.
Mid-morning—milky coffee.
Dinner—a little very fine mince and milk pudding.
Tea—milky tea only.
Supper—finely sieved vegetable soup, made with milk and cheese.

With these meals he takes as much glucose as he can manage, and it is necessary, even on this diet, to take from 3 to 6 dr. (10.5–21 ml.) of dilute hydrochloric acid daily. Nevertheless, his weight has steadily gone down from 11 st. 7 lb. to 9 st. 9 lb. (73 to 61 kg.). As regards the medical advisers' remarks about the anaemia being "completely controllable by modern therapy," etc., perhaps I should just give you the history.

In 1927–9 (some years before I became his doctor) he developed signs of degeneration of the spinal cord, affecting the muscles of the legs and buttocks, which became progressively worse until he had a complete paralysis and was hardly able to stand, let alone walk. In 1929, in the New Lodge Clinic at Windsor, under Sir Arthur Hurst, pernicious anaemia was diagnosed and he was given by mouth what was then the new liver therapy. Later—about 1932—he was, I believe, the first patient in this country to receive intramuscular liver in the form of "campolon." He has had some form of liver therapy continuously ever since then, and his blood has been almost normal for some years. However, permanent damage had been done which could not be rectified by the most intensive treatment by Sir Arthur Hurst. Considerable wastage and weakness of the lower limbs has persisted; also total achlorhydria has persisted. Unfortunately, in later years he has developed a chronic colon condition.

I resent the implication contained in the letter from the Ministry of Food that I do not understand modern therapy and that my treatment could have been better. I only wish that the late Sir Arthur Hurst were still alive, so that I could pass on this criticism to him. I apologize for bothering you and for writing at such length, but I am sure you will agree that it is an appalling state of affairs when "medical advisers" who have not seen a patient advise against the patient's own doctor's advice. In this case, it is virtually a sentence to death by slow starvation.

I am,
Yours truly,
HUMPHREY FOXELL.

SIR,—It may be thought that any stick is good enough to beat the Government with, but I believe that unbiased commentators, who think before they write, will disagree with the implied verdict in the annotation "It Can Happen Here" (Dec. 28, 1946, p. 995), and with Dr. H. Foxell's complaint (p. 1001) against the Ministry of Food officials for disallowing the extra 12 oz. (350 g.) of butter beyond the patient's weekly ration. The Ministry's reason for doing so—that no lubricant was necessary for swallowing—is of course fatuous, but if they had given as their reason that the patient was suffering from inoperable cancer of the oesophagus and that he was bound to die shortly, I think most sane people would agree that it would be a serious waste of six persons' weekly fat ration for a very doubtful and temporary benefit.—I am, etc.,

London, W.1. WILFRED HARRIS.

SIR,—From Dr. Humphrey Foxell's letter (Dec. 28, 1946. p. 1001) we see how a patient may be free to choose his doctor but cheated of his treatment.

The doctor on the spot should be free to use his discretion unhampered by control from above and afar and not worried by the letter of the Law. Why, for instance, are only two forms of pneumoconiosis scheduled (Form MED.2, Schedule 1(*b*), Silicosis or Asbestosis) as needing extra milk ration?—I am, etc.,

London, E.6. C. JEROME MERCIER.

SIR,—So much attention has been paid to Dr. Humphrey Foxell (Dec. 28, 1946, p. 1001) and his one unfortunate patient who died of an inoperable cancer that I wonder if some could be paid to incurable tuberculous patients, whose deaths are far more numerous. At least as good if not a better case than Dr. Foxell's could be made for providing these unfortunate people with an extra ration of 2 ounces of butter per day; yet all they have been allowed by the Ministry of Food is 2 ounces of fat *per week* and 14 pints of milk.

It may be surprising that Dr. Summerskill has not been inundated with personal letters demanding extra rations for them, but although in the area where I am tuberculosis officer two or three die every week, and although many of these are well known not only to me but to experienced general practitioners, distinguished physicians and surgeons, and recognized dietetic experts, no personal letter has, so far as I know, been sent to the Parliamentary Secretary to the Minister of Food. Yet I feel sure that all these doctors are just as much concerned about the welfare of their patients as Dr. Foxell. I must conclude, therefore, that they found other means of helping and encouraging their patients whom they could not hope to cure instead of demanding a vital foodstuff which at the best could do no more, as in Dr. Foxell's case, than prolong an unhappy existence and which the medical advisers to the Ministry of Food considered could be better used for the prevention or cure of diseases or the alleviation of definite symptoms such as difficulty in swallowing.

Many tuberculosis officers did indeed think it right to assist as far as possible in the representations which were made by various bodies to the Ministry of Food in order to obtain as fair a deal as possible for the tuberculous. It now seems that we might have armed ourselves with the appeal of a dying patient and faced the Ministry of Food with the dilemma either of acceding to our requests for extra rations, thereby providing

an example which would have nullified their carefully thought-out plans for a fair distribution to the population as a whole, or of refusing them, thereby exposing themselves to the criticism that they had made a decision about a patient in defiance of our requests without making a personal examination. Of course this criticism might have appeared even more childish when applied to a large number than it does when applied to Dr. Foxell's apparently (though not in fact) isolated case. Moreover, this method of forcing the claims of one section of the community might itself have been exposed to the criticism that it was grossly unfair and unreasonable. Perhaps we were deterred by these considerations, and perhaps Dr. Foxell would have been deterred from writing his letter if he had looked at the problem as a whole instead of concentrating on one patient. No doubt his devotion to his patient was worthy of praise, but would he have received so much support and flamboyant publicity in your columns if you had not been hard up for a piece of hot propaganda to hurl at the National Health Act? And will this object be achieved by attacking the Ministry of Food, which many people think is an example of co-operation between doctors and laymen in running a necessary national scheme in a very successful manner? During six years of their control there has been little if any complaint of the flouting of medical opinion, and if this is a foretaste of control under the National Health Act it may be asserted that this Act could scarcely have a better recommendation.—I am, etc.,

London, N.W.3. G. A. BACK.

The Plebiscite

SIR,—The result of the plebiscite was as much surprising as it was disquieting. It is not so much that so many voted "Yes" but that so many abstained from voting. Doctors have never been known to pull together, and it is this lack of unity and want of *esprit de corps* that shows up our weakness and leaves us open to attack from any quarter that is intended.

True, the wording of the plebiscite was somewhat ambiguous. I believe that many voted "Yes" because of the fear of victimization. The wording would have been more appropriate if it had been in two parts: (*a*) Do you want to negotiate for a complete State Service? (*b*) Do you want to negotiate for an amended or extended Service? I am perfectly sure that 90% would answer "No" to (*a*), for they are very few who want to be the complete Civil Servant. I have no doubt that 100% would answer "Yes" to (*b*), for it is time that the Government did something to improve the Service, for which we have been so long clamouring, and which would be acceptable to the profession. The difference between (*a*) and (*b*) is that one is "tyranny" and the other "freedom."

We are a noble profession and not an industry, and it is high time that Mr. Bevan was told once and for all that doctors will not tolerate nationalization in any form. If the doctors would stick together and be of one mind, then they, and not Mr. Bevan, would do the table-thumping.—I am, etc.,

Nottingham. S. J. BRENNAN.

SIR,—The result of the plebiscite has shown that 56% of those who voted were against negotiations. This is only a little more than half, and when one considers that 20% of all doctors abstained from voting it is clear that the B.M.A. Council has no justification in refusing to negotiate as it has less than half the profession behind it. Furthermore, many of the "No" votes were given as a result of the recent threatened "strike" of Insurance Acts practitioners, which was successful in winning concessions from the Minister. Many thought that a little more defiance would be good for him, and that he would then relent and presumably start all over again. Many more voted "No" as a political gesture against the Labour Government, which they, as Tories of the old school, dislike so much.

This negative attitude is clearly unreasonable and cannot possibly do the profession any good. Mr. Bevan will go ahead to establish the Service in the knowledge that he has about half the profession willing to help. Yet we in the helpful half are debarred by the Council's decision from negotiating with the Minister on the regulations, and giving him the technical advice which will make the Service a success. Now that the Act is law it is our duty as citizens to make it work, and to clothe the framework, making an administrative skeleton into a humane National Medical Service working solely for the good of the patients and the prevention of disease, and thinking less as time goes by of a mercenary profit motive.—I am, etc.,

Wolsingham. WILLIAM D. GRAY.

SIR,—Stung by the results of the medical plebiscite Mr. Bevan now writes to say that if the B.M.A. will not talk with him he will consult with other interests to assist him to set up the administrative machinery for the new Health Act. Why not say this before? It is exactly what the Negotiating Committee have been asking him to do. And primarily we want to ask him to consider whether some compromise cannot be found over the basic salary. Does this mean that in the long run we are to become Civil Servants, or that the basic salary is to be a means of tiding over the period while ex-Service doctors and young medical men settle down into practice under the new Service? If the latter, will it not be possible to agree for a term of years and then free the profession to such independence as we have had under the N.H.I. Act without restricting regulations, which can never meet all the changes and chances of disease in human nature?—I am, etc.,

Broadstairs. H. M. RAVEN.

B.M.A. Policy

SIR,—In a letter in the *Lancet* on Dec. 28, Mr. T. B. Layton makes so many confused statements that it is impossible to deal with them in the space of a short letter. However, it is very necessary to correct the loose statements suggesting that the leaders of the B.M.A. have "herded the will" of the profession and influenced the plebiscite vote.

The official B.M.A. communications received by me have always been restrained and non-directive, as have been the editorial articles appearing in the *Journal* on the subject of the recent Act. The correspondence published in the *Journal* accurately reflects the opinions freely expressed at the well-attended Divisional meetings of practitioners. Those of us who know Mr. Layton may sit back and smile tolerantly, but statements such as appear in his letter are apt to produce a false impression in the mind of the general public that the results of the plebiscite do not really reflect medical opinion.

A recent article in the *Times* contained the word "emotional" as applied to B.M.A. policy. If the adjective is accurate it must be applied to the general body of practitioners, and I would point out that situations which conflict heavily with any individual's conviction of right and wrong will usually produce emotional response.—I am, etc.,

Stamford. E. C. TILL.

SIR,—Dr. H. B. O. Cardew in his letter (Jan. 4, p. 29) makes several dramatic and unjustified accusations, closing with the sentence, "I accuse the British Medical Association Council of adopting a narrow sectional viewpoint at a time of immense social change when it should be leading the profession towards the creation of a great health service." With these words Dr. Cardew not only accuses himself but convicts himself of adopting a sectional viewpoint, for he suggests that the Council should lead the profession in a direction which the majority consider to be against the public interest.—I am, etc.,

London, N.W.1. R. HALE-WHITE.

The Decision

SIR,—To throw light on Dr. D. E. Yarrow's, Dr. A. L. Jacobs's and Dr. S. Lipetz's problem (Jan. 4, pp. 29 and 30) let us recall, as only doctors of 60 and over can, what happened in December, 1912, *re* service under the Lloyd George Act of 1911. Then, after a rousing campaign, round about 95% of practitioners *pledged* themselves to refuse service. In the last week of the year word went round in every district that a doctor or two had "gone on the Panel." (Some of these had

not signed the pledge, others had.) What happened? The rest met hastily in groups, considered the situation and—sent in their names. Within 10 days over 95% were *in* the service. In short, 19 out of 20 would not serve; 19 out of 20 did. The rest, the diehards, had to choose between retirement, specialism, and starvation. I write this not cynically but as relevant history.

What then? It is abundantly plain to me that we must negotiate and, both for the public's and our own sakes, help to make the best possible Service. The Divisions should back negotiation and the S.R.M., Jan. 28, *either* reject Dr. Cockshut's motion and call upon the Negotiating Committee to carry on, *or* amend this motion so that a new (? minority) committee can be appointed, to serve not only the Yes-voters but also the Noes: if the latter course is adopted I hope to see Mr. H. S. Souttar in its Chair, carrying on the great work he did in presiding over the Medical Planning Commission, the foundation on which the new Act is built.—I am, etc.,

W. ARNOTT,
ex-Oxford Division.

Totland Bay, Isle of Wight.

National Health Service

SIR,—There is one weakness in our armour with regard to our attitude towards the Government Health Scheme which may easily prove our undoing. At the plebiscite everybody was of course entitled to vote as he thought fit. But if the minority should be allowed to accept service under the present Bill the Minister of Health may easily be in a position to organize a skeleton service, and there can be very little doubt that other members of the profession will gradually filter into the Service. In such a contingency we would be broken and come under the dictatorship of fifth-rate officials.

I suggest, therefore, that we should endeavour to persuade the minority not to accept service. I suggest that we should insist that we ourselves provide the medical service, and that the Government merely act as representative of the public to see that we carry out our undertakings. I am quite sure that such a service would be acceptable to the majority of our profession.—I am, etc.,

I. HARRIS.

Liverpool.

SIR,—I think it possible that the most important question in connexion with the National Health Service Act is being overlooked in the discussion of the plebiscite results. This question surely is whether the Act will provide a better medical service for the nation. If an affirmative answer can be given, there must be reasons of great moment to justify the leaders of the British Medical Association advising the profession not to participate in the shaping of the Act.

Certain obvious benefits will be conferred on the public by the Act; most important perhaps will be the ending of the financial burden of illness and the delays in seeking treatment which this sometimes entails. The public know also that under the Act they will be able to obtain free specialist advice and treatment when necessary. The hospitals will be able to provide a better service as they will not be limited in their work by lack of funds, and the general practitioner service will eventually be more fairly spread throughout the country. This should reduce the inconveniences suffered by patients especially in the poorer districts, which result from overcrowded surgeries and rushed and harassed doctors. Furthermore, under the Act (Clause XVI) the Minister will be empowered to encourage and finance medical research.

The Health Service Act should not be viewed as an isolated piece of legislation but as an integral part of a great legislative plan for achieving social security. The people of this country, by their welcome of the Beveridge report and by returning a government to power pledged to introduce social security, have expressed their hopes and wishes in these matters.

If the leaders of the B.M.A. should now advise a course calculated to frustrate a vital part of the plan for social security, they will, I fear, incur the anger and contempt of the majority of the people. It is to be earnestly hoped that they will not adopt this course and oppose a measure which, in spite of all its defects, is so plainly designed to be a great and lasting benefit to the nation.—I am, etc.,

JOHN PEMBERTON.

Sheffield.

A Bad Press

SIR,—It is strange that, although individually the doctor is generally liked and respected, collectively as a member of the medical profession he is everybody's "Aunt Sally." The recent reaction to our recoil from a bad Act is only one more illustration. Two related factors are, I think, involved. First, everyone hates and is afraid of certain diseases. Evil spirits cannot be blamed in these "enlightened" days, but the old habit of substitution is employed, and upon a *scapegoat* is unloaded a heavy weight of displeasure. What more natural than to choose for this purpose the doctor so closely associated with the trouble. I have heard it said "that everyone is afraid of the doctor"; meaning, I suppose, that collectively he is used to canalize much dread; and fear easily becomes dislike. Secondly, pretended omniscience is always hated. Yet from the days of the Delphic Oracle to our own times, say in the case of a medicine man practising in the Australian bush, infallibility has always been courted. Once again the doctor *willy nilly* has been cast for this role. Who cannot remember his *obiter dicta* to an assembly of anxiously waiting relations? Perhaps the *Times* leader writer to whom you refer has permitted these or similar considerations to influence him.—I am, etc.,

E. GALLOP.

London, S.W.1.

The Negotiators

SIR,—As one of the small majority of general practitioners who voted against negotiation by the present Negotiating Committee with the Minister on the new Health Act, I should like to express my point of view, which has not so far been quite the same as other expressed views but may not be unique. I voted "No" as an expression of no confidence in the present Committee to represent the present generation of doctors. The point of view of the Committee as I heard it expressed by Dr. Dain in this area last summer shocked me as being reactionary, muddled, and fogging the issue by too many points, some relevant, others not relevant. It is not for doctors to express their opinion at this time about the State control of hospitals; I would stand for ever against the deprivation to doctors of the right of appeal to the Courts and against the Minister's power to repress the Annual Report of the Central Health Council. But I am not going to stand upon the question of salary, or buying and selling of practices, provided my living is secured and my professional integrity assured. Further, I wish my future discussed by men and women of young and middle age, and not by those, however able, over 65.—I am, etc.,

ENID A. HUGHES.

Ruthin.

The Surgeons and the Act

SIR,—At the special meeting of Fellows of the Royal College of Surgeons of England on Nov. 29 (*Journal*, Dec. 7, p. 869) the President said that "The Council has to answer in a corporate capacity the question whether it desires the Negotiating Committee to enter into discussion on the framing of such regulations." Might one ask why? The President then goes on to say that "As a corporate body the Council has answered 'Yes,'" and later, when adversely criticized by a majority of the Fellows present, complains how difficult and distressing the position of leaders of the profession might be. If the "leaders of the profession" make decisions of high policy without first consulting their electors, their position will become increasingly difficult and distressing.

The President ended by saying that he himself held the view strongly that at this stage it was their duty to negotiate. I wonder if he still holds this view after the Willesden episode, rightly described in the *Journal* as outrageous. If a medical officer, matron, and nurses can be dismissed for refusing to join a trade union before the coming of a National Health Service, anything can happen when and if it does come. The Willesden councillors have had to save their face, but they have not changed their heart.

If the word "outrageous" seems a trifle strong to the Socialists, think what would happen when a Conservative Government was in power if any municipal employee who joined a trade union was dismissed.

The red light is showing; municipalities up and down the country are taking away freedom of action from their

employees. For some extraordinary reason employees earning over £700 in Rotherham are exempt. Let us beware; our turn will come. If 23,000 of us stand firm for freedom and stick to our principles, we shall prevail. And let us hope that the "leaders of the profession" will not jump into the big jobs, as they have in other walks of life, until the matter has been thrashed out to the very bottom to the satisfaction of the majority of the profession.—I am, etc.,

Rotherham. ERIC COLDREY.

SIR,—Many practitioners have expressed concern over the ill-informed attitude of the Councils of the Royal Colleges towards the National Health Service Act. Mr. G. Housden's timely letter, "Surgeons Up in Arms" (Dec. 21, p. 960), is to be welcomed. I have even heard the College Councils referred to in some quarters as the "Bevan Boys." It is to be hoped that these bodies will realize that they have a serious responsibility towards the public and the profession, and that in medico-political matters they will co-operate with the better-informed B.M.A.

The freemen of the profession are to be congratulated on the wisdom of their plebiscite decision. At last the B.M.A. has its mandate, and if the medical profession possesses the courage of the Willesden nurses the Association will not be lacking in strong support. United, we have the power to defeat the unhealthy designs of any political party. The problem confronting us is not primarily one of health. It is a purely political matter, the real motive being to control the doctors and thereby their certificates in order to secure the financial aspects of the social security scheme. This should be made clear to the public.

I believe I am not alone in the fear of a general moving towards National Socialism in Britain. If this is a true conception of recent events we have a clear duty towards the community as well as the profession to resist State control with all the power at our command. We must win the first round of the battle against National Socialism. Then, and not until then, we can proceed to consider a scheme designed to improve the *health* of the nation.—I am, etc.,

Guildford. J. O. M. REES.

Medical Students and the Act

SIR,—I am a medical student. It is not for me to condemn men of wisdom and experience in the profession I have chosen to follow, but medicine is my future and therefore I consider myself justified to take part in the somewhat vitriolic discussion on the National Health Service Act. Perhaps the term medical student may lead many to associate me with "adolescence." May they not be deceived. My wife is a general practitioner and I am ex-Indian Army and a liberal.

What I abhor in the approach of many doctors is their obvious disregard in their written criticisms for the social problems which exist in our over-industrialized community. No alternatives or secondary schemes have been offered to replace the National Health Service Act as it stands. Amendments cannot be classified as an alternative scheme. Recent correspondence has been metalled with "for the honour of our profession," "we utterly disapprove," and many similar utterances of indignation. The Government has been criticized, but no evidence exists in the public mind of a pitched battle on the grounds that the medical profession have put forward a more palatable scheme and that the Government turned it down.

The Act has become law. But will any doctor deny the need for a health service for the poor?—not necessarily a scheme governed by politics, such as the National Health Service Act. Why not a health service on the scale of an increased panel system to include the wives and families of their menfolk on the panel; or that all persons whose income is below a certain figure be included in the panel? The prestige of the B.M.A. would have risen greatly in the public mind if they had fought the Government with counter-proposals for a National Health Service. Instead the public are fogged and remain silent.

The public have risen as one body and with one mind over the nationalization of transport. Why did they not rise up and oppose the National Health Service Act? I suggest it was because they did not, and still do not, understand the full implications of the Act. The poorer classes need such benefits badly, and the remainder of the public are prepared to accept the Act on those grounds. There was no large-scale publicity plan to show the public that there were other ways of serving the basic purpose of the Act without the destruction of the profession as it is known to-day. Here I must class the medical student. He does not know which side to support. How can he without any guidance from the B.M.A.? He tends to support the national scheme, and looks on the present unconstructive attitude of the instituted members of the profession as the collective protestations of a hen being disturbed on her nest. I repeat, the B.M.A. has never enlisted public support against the Act. Who, or what body, is in a position to stand against the dictatorial impositions of the present Government? A handful of nurses broke up their methods. Surely such a powerful organization as the B.M.A., standing on untouchable ground, can find a way to institute a health service of its own? No doctor can be compelled to enter the State Service, and if all the writers in these columns of past months stand by their maxims of "for the honour of our profession," they will put their heart and soul into any such venture which might give the country one concrete instance that our Labour Government is not an idol to be worshipped under compulsion.

Lastly, it would be unwise to forget the small army of mature medical students now studying at universities throughout the country. Their support would be valuable to any counter-scheme started by the B.M.A.; but that support can never be obtained if they are continuously kept in the dark with regard to their own future.—I am, etc.,

London, S.W.6. DAVID MCQUEEN.

*** Mr. McQueen's suggestion in the third paragraph has been B.M.A. policy for many years.—ED., *B.M.J.*

Reiter's Disease

SIR,—From the many references to Reiter's disease that have recently appeared in the *Journal* it seems that several misconceptions exist on the subject. Much of the confusion would appear to be due to the fact that the disease bears Reiter's name, since the case described by him does not seem to me to have been a true example of "Reiter's disease" as we now know it. In his case (described in 1916) the illness was ushered in with severe abdominal pain, diarrhoea, and blood-stained stools, followed eight days later by a purulent urethral discharge with bilateral conjunctivitis and, on the ninth day, an acute polyarthritis. This appears to me to have been a clear case of dysenteric polyarthritis.

It is interesting to note that Feissinger and Leroy, in a study of an epidemic of dysentery on the Somme in 1916, noted before Reiter the same clinical syndrome (syndrome conjunctivo-urethro-synovial) in four of their cases. They also described a case of amoebic dysentery with conjunctivitis and arthritis. Dysenteric arthritis, often monarticular (it was so in all the cases reported by Bonnin and Kay), is a not infrequent sequel in some epidemics of bacillary dysentery, and although it may occur during the acute stage of the disease it is met with more often during convalescence.

Reiter's disease, as it is generally recognized to-day, is characterized by a clinical syndrome consisting of non-gonococcal urethritis, bilateral conjunctivitis, arthritis (usually polyarticular), and occasionally balanitis and keratodermia blennorrhagica. This was, in fact, recognized many years before Reiter published his case and was described by Launois in 1899. Launois's case was of venereal origin, and in my experience this is always so with this disease. It consists of a variety of non-gonococcal urethritis with blood-borne complications; it runs a protracted course and sometimes recurs after long periods of remission. Urethritis is usually of the Waclaich type and characterized by a longish incubation period and mild subjective and objective signs and symptoms. In some of my cases, however, there was a profuse purulent abacterial urethral discharge with pain and frequency of micturition. Cases have been reported with upper urinary-tract lesions, and a case at present under my care, which was admitted with haematuria, non-gonococcal urethritis, bilateral conjunctivitis, and polyarthritis, shows dilatation of renal pelves. In my series conjunctivitis was noted between 2 and 16 days after the appearance of the urethral discharge, and arthritis (always polyarticular) 1 to 6 days later. In one case, however, arthralgic pains in several joints were observed 2 days before the onset of conjunctivitis and definite articular involvement did not occur until 4 days later. Fifty per cent of my cases subsequently developed keratodermia blennorrhagica. I have also had several cases of primary non-gonococcal urethritis with metastatic complications but in which the syndrome was incomplete.

The venereal syndrome is also seen in association with a gonococcal urethritis, but in these cases there is often a primary mixed infection of both gonorrhoea and non-gonococcal urethritis, and evidence is accumulating that the latter is the real cause of the condition. Reiter isolated a spirochaete in the blood of his case, but in this respect all subsequent workers have failed. Macfie in 1917 reported a case of primary spirochaetal urethritis with arthralgic pains and iritis; the condition reacted favourably to galyl and mercury. Your annotator refers to this case—wrongly, in my opinion—as being one of Reiter's disease.

Reiter's syndrome has also been noted in cases suffering from staphylococcal septicaemia by Biland in 1905 and Junghanns in 1918. Biland's case, a man aged 21 with osteomyelitis of the right acromion process, non-gonococcal urethritis, bursitis, and subcutaneous abscesses (all due to *Staph aureus*), had the primary focus in the acromion process, although the author did discuss the possibility of primary urethral involvement. Junghanns himself considered that his case in a boy aged 16 with non-gonococcal urethritis, conjunctivitis, and polyarthritis was due to a generalized septic infection arising from a boil on the upper lip. Many cases of arthropathic psoriasis have been described wrongly as cases of Reiter's disease, but confusion here rests with the differential diagnosis of the skin lesions; the rupioid eruptions may be indistinguishable from the soft parakeratotic patches which are an occasional manifestation of keratodermia blennorrhagica. The syndrome in arthropathic psoriasis is never complete and usually consists of arthritis and skin lesions only.

I described in 1944 the presence of inclusions (initial and elementary bodies) in the urethral discharge, conjunctival secretion, and skin lesions, and these findings have been confirmed in the investigation of further cases. Dienes and Smith in 1942 cultured pleuropneumonia-like organisms from the urethral discharge of a man suffering from arthritis, and Henderson Begg has recently isolated this organism from the urethral discharge of one of my cases of Reiter's disease.

Fever therapy is the treatment of choice. In my experience penicillin and the sulphonamides have no beneficial effects.

In conclusion I would like to put forward the suggestion that a distinct differentiation should be made between cases of venereal origin and dysenteric origin. I advocate that the term "Reiter's disease," or better still "dysenteric arthritis," be applied only to the latter, and that the former—those of venereal origin—be described as "non-gonococcal polyarthritis" or "the non-gonococcal syndrome." Much confusion would, I am convinced, be avoided by such a distinction.—I am, etc.,

London, W.1. A. H. HARKNESS.

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Antibiotics and Canine Distemper

SIR,—Some of my colleagues may perhaps be interested in the use of penicillin for the bronchial complication of distemper in their pets. Recently my wire-haired terrier developed distemper complicated with bronchitis of a severe type. The dog was seen by two veterinary surgeons, who confirmed the diagnosis and considered his chances of survival were practically nil. Sulphonamides had been given in adequate dosage for about one week, the temperature remaining high—105° F. (40.6° C.)—and with little, if any, apparent benefit. I suggested intramuscular penicillin, 200,000 units of the sodium salt; this was injected, and within twelve hours the temperature had fallen to 102° F. (38.9° C.), and after a second dose of 200,000 units given twenty-four hours later it fell to normal—100° F. (37.8° C.)—and remained there. The terrier had an uneventful recovery and is now (three weeks later) quite well, much to its owner's delight.

It is said that penicillin has little or no effect in virus diseases, of which this is one, so it may have been the secondary organisms in the bronchial complications that were sensitive. I understand that the recent epidemic of distemper in dogs is of Canadian or U.S.A. origin and of a virulent nature, and many older dogs have been attacked with fatal results. The effect of penicillin in this one case was so dramatic that the veterinary surgeon in question decided to use it in other dogs' attacks—with equally gratifying results. Though one or two swallows do not make a summer, it may be that, as in this case, penicillin may have a place, and many valuble pets or prize dogs may be saved by its use.—I am, etc.,

Bournemouth. S. A. MONTGOMERY.

Immunization against Whooping-cough

SIR,—Dr. H. Sugaré (Dec. 7, 1946, p. 876) will be interested to know that the "field trials" of whooping-cough vaccine (Nov. 9, p. 699) are now being extended to Leeds, where a new British alum-precipitated vaccine is to be used. Despite the good results claimed in the U.S.A. previous trials in this country have not been very promising, and until a definite assessment of the value of pertussis vaccines is made in Britain it is considered undesirable to associate them in the minds of parents with a procedure of proved efficacy such as diphtheria immunization. When a vaccine of proved value is available the next step will certainly be to test it in combination with diphtheria toxoid, as a combined antigen would be of great advantage to the child and to all concerned with immunization schemes.—We are, etc.,

Public Health Laboratory Service, London, N.W.9. W. CHAS. COCKBURN.

Leeds. JOHN F. WARIN.

Hospital Regions

We print below a letter sent by the King Edward's Hospital Fund for London to the Ministry of Health.

SIR,—We are grateful for the opportunity afforded by your letter of Nov. 15 to comment on the areas proposed for the regions in the London area.

I am to say that the proposals as they affect the London area are fully in accord with the view which this Fund has from time to time expressed. It is essential that the hospital services of London and the Home Counties should be taken together, and that the arrangements should be such as to secure to the full the advantages expected to accrue from the extension of the university influence upon the standards of hospital work. At the same time, we appreciate that the area is as a whole too large to be operated as a single region, and we would agree that the division of the area into four regions offers the best practical alternative open to the Minister. In saying this we would not wish to prejudge the question of the advisability of some reconstruction of the boundaries of the regions on the lines now being suggested by the Voluntary Hospitals Committee for London.

The experience of the Fund shows that it is especially in the populous periphery of the Metropolitan area that the need for further development is most apparent. This development must be completely integrated with the hospital services of the central area, and we are strongly of opinion that the advantages of such a plan as that now proposed will in the long run far outweigh the possible conveniences of any alternative plan such as might be framed to coincide with the present boundaries of the County of London. This alternative could only tend to perpetuate the defects of the present arrangements (see enclosed paragraphs 11 and 12 of the Statement of Principles submitted to the Ministry in 1944).

11. In the case of London, the regional arrangements must cover part or the whole of the area of the Home Counties, however this area may be ultimately defined. It may be that special arrangements will be called for as regards the regional machinery.

12. Although the size of the area of the authorities remains to be determined, the White Paper contains a hint that it will be necessary to have regard to administrative convenience, and implies that the area of the London County Council will constitute a single authority. The experience of the King's Fund in the Metropolitan Police District proves unmistakably that such an arrangement would only perpetuate one of the primary sources of the maldistribution of hospital facilities in the metropolitan area. In so far as there is a lack of adequate hospital services in the London area, it is to be found on the periphery of London where new populations have sprung up within recent decades—where it has proved difficult for voluntary provision to keep pace with the growth of population, and where the local authority has equally failed to meet the situation. If ever there was a case for co-ordinated planning, it is over this wide area that transcends the County boundaries.

—I am, etc.,

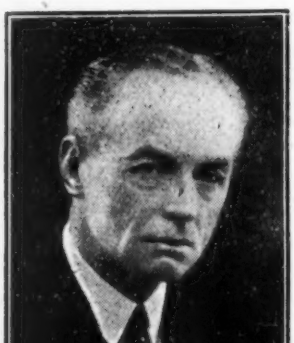
A. G. L. IVES,
Secretary.

Obituary

SIR RICHARD CRUISE, G.C.V.O., F.R.C.S.

Sir Richard Robert Cruise, who died on Dec. 24 at St. Mary's Hospital, London, after a brief illness, had been Surgeon Oculist to Queen Mary since 1936 and before then Surgeon Oculist to King George V.

Born at Purneah, India, son of Francis Cruise, he was educated at Harrow and St. Mary's Hospital, qualifying in 1900 and taking the F.R.C.S. three years later, after he had worked as house-surgeon at the Bristol Eye Hospital and had spent some time in Paris clinics. He continued his ophthalmic studies at Moorfields Hospital, where he became chief assistant, and he was also for some time senior clinical ophthalmic assistant at St. Mary's. During the war of 1914–18 he served with a temporary commission in the R.A.M.C. in France and at the 3rd London General Hospital at Wandsworth, and he did valuable work as ophthalmic surgeon to King Edward VII Hospital for Officers. His principal appointment in later years was that of surgeon to the Royal Westminster Eye Hospital, and he was also consultant oculist to the Harrow Cottage Hospital.



[Bassano, Ltd.

Richard Cruise was a most accomplished operator, shown perhaps at his best in cataract cases. He retained his operative skill and was in harness up to the time of his death. While serving in France he had invented a chain visor for attachment to the rim of the soldier's steel helmet, and he described this device in a paper on "Protection of Eyes in Warfare by Adoption of the Author's Visor" which appeared in the *Transactions of the Ophthalmological Society* in 1917; he also published in that periodical an account of his operation for the restoration of contracted and disorganized eye sockets (1919), and of hinge-flap sclerotomy for glaucoma (1940). Early in his career he wrote a monograph entitled *Clinical Refraction*. He was made a C.V.O. in 1917, a K.C.V.O. in 1922, and a G.C.V.O. in 1936.

An open-air man of wiry physique and polished appearance he hunted regularly for many years, was an expert shot, and a good golfer. Few if any medical men can have ridden so successfully in point-to-point races over a long period. He owned the famous steeplechaser War Gratuity, so named because he bought it with his war-service gratuity. That horse won many races with him in the saddle and died while he was riding it in a steeplechase fifteen years ago.

Sir Richard Cruise was popular with his colleagues and always ready to help or advise. He joined the British Medical Association in 1906, but did not hold office at Annual Meetings and took no active part in professional politics. In later life he spent many happy days at his country house Shipton, at Winslow, in Buckinghamshire, while continuing to practise in Wimpole Street.

SIR HARRY WATERS, M.R.C.S., D.P.H.

Sir Harry Waters, who died recently at Stroud, in Gloucestershire, at the age of 78, had a distinguished career as a public health administrator in India, and was chief medical officer to the East Indian Railway from 1917 until his retirement in 1923.

Harry George Waters, son of Alfred Waters, was born at Rathmullen, in Co. Donegal, on April 19, 1868, and was educated in England at the Royal Naval School, New Cross, and at St. Thomas's Hospital. He qualified as M.R.C.S., L.R.C.P. in 1892, and afterwards obtained the D.T.M.&H. and the Cambridge D.P.H. Having held house appointments at the Hull Royal Infirmary he went out to India to join the medical service of the E.I.R. Besides his ordinary duties he was appointed an honorary magistrate and plague officer at Tundla, in the United Provinces, in 1907, and six years later held the corresponding posts at Jamalpore, in Bengal. He was responsible for the establishment of laboratories at Tundla and at Allahabad, and throughout the war of 1914–18 held the rank of Lieut.-Colonel in the Indian Defence Force, and was later gazetted as honorary Colonel. Before his return from India he examined in hygiene at Calcutta University for two years and was a member of the Bengal Sanitary Board and president of the Conference of Chief Medical Officers of Railways. In his leisure time he was a keen rifle shot.

During the past twenty-three years Sir Harry Waters took a prominent part in local affairs at Stroud and continued his active interest in the teaching of first aid. He had started the St. John Ambulance classes on the East Indian Railway in 1897, was a Knight of the Order of St. John of Jerusalem, and received the Volunteer Decoration. At Stroud he had been honorary pathologist to the General Hospital. During the recent war he was medical officer to the local company of the Home Guard with the rank of captain in the 7th Battalion of the Gloucestershire H.G. He was also a J.P. and at one time chairman of the Stroud Urban District Council. He received his knighthood in 1924 in recognition of long service to public health in India. He married in 1900 Dr. Winifred Pierce, a medical graduate of Edinburgh University, and they had two sons, one of whom has already had a distinguished career in the Indian Medical Service.

Medico-Legal

A RADIOGRAPHER ELECTROCUTED

It is some time since a death from electric shock by an *x*-ray apparatus was reported. The last case of the kind occurred in Wimbledon in the early thirties. A nurse imprudently put a hand too near the cathode when a patient was being screened and she and the doctor were killed. As a result every firm promptly introduced shock-proof apparatus, and most medical men probably assumed that this danger had been eliminated. A radiographer, however, was recently killed by shock at Derby.

According to a newspaper report[1] Dr. H. G. Grace said at an inquest that after he had screened a patient he had told the radiographer, Mr. V. I. Marshall, that it would be necessary to make certain adjustments to the equipment. Marshall, he said, stood at the control table making adjustments and watching results. He then moved away to inspect the meters close at hand. He gave a small jump backwards, apparently to make a further adjustment. There was a brilliant white flame and he slumped to the floor. He was at once treated for shock but did not recover. The doctor said, in answer to the coroner, that certain parts of the apparatus were not shock-proof. Completely shock-proof apparatus was very difficult to acquire.

A representative of the manufacturers said that the machine had been standard equipment when installed in 1936. It would be possible to get an electric shock from a "tremendous number" of points on the apparatus, which would transform up to 100,000 volts. The coroner said the corporation had failed in its duty to its employees and everyone else by having a machine like this unless efforts had been made to get a shock-proof apparatus. He referred to evidence that other insufficiently shielded machines were in use in the town and hoped that speedy steps would be taken at public hospitals and private institutions to ensure that no danger existed. He expressly excepted Dr. Grace from his criticisms.

[1] *Derby Evening Telegraph*, Dec. 14, 1946.

Dr. George Jessel, of Eccles, Lancs., who died on June 23, left £30,840. Dr. W. H. Dobie, who died on March 3, left £18,000. Dr. Charles James Royston, of Bournemouth, who died on Oct. 6 aged 46 years, left £20,310. Dr. John Barbour Stewart, of Kirkintilloch, Dumbartonshire, who died on Aug. 15 last, left personal estate in England and Scotland valued at £16,837.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

T. P. S. Powell, M.B., Ch.B.Ed., has been appointed University Demonstrator in Anatomy, and J. A. R. Miles, M.B., B.Chir., and G. R. E., Naylor, M.B., B.Chir., have been appointed Demonstrators in Pathology; all three appointments are for three years from Oct. 1, 1946. J. H. Dean, M.B., B.Chir., and D. B. Cater, M.B., B.Chir., have been appointed temporary Demonstrators in the Department of Pathology for three years from Oct. 1, 1946, and Jan. 1, 1947, respectively.

At a Congregation on Dec. 14 the following medical degrees were conferred:

M.D.—*R. I. S. Bayliss.
M.B., B.CHIR.—*C. W. A. Pullan, *A. S. Wigfield, H. S. Eyre.
M.B.—*A. F. Alsop.

* By proxy.

UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examinations indicated:

M.CH.ORTH.—J. A. P. Cameron, J. P. Heron, C. Hollenberg, D. M. Jones, W. Lamont, R. Roaf, G. D. Rowley, E. W. Stout, A. K. Talwalkar, F. R. Tucker.

FINAL M.B., CH.B.—*Part I:* Mary F. Barrie, Elspeth M. Evans, Elspeth M. Hill, C. O. le C. Hughes, B. Kay, J. H. Murray, S. Plumpton, Enid Rees, Millicent M. C. Regan, J. N. Rimmer, S. S. Swift, H. Thompson. *Passed in Separate Subjects:* J. G. Kingan and D. N. Menzies (Pharmacology and General Therapeutics). *Part II:* C. Jones.

D.P.H.—*Part I:* L. C. Allan, G. H. Ball, T. W. Brindle, A. M. Brown, Mary F. Brownlie, W. F. Christian, D. J. Doherty, Catherine S. Ellams, D. J. Fraser, J. A. Gillet, Patricia F. M. B. Gould M. D. Kipling, Ann Prysor-Jones, B. Pujari, K. V. Robinson, C. D. Rosenwald, K. C. Sahu, Irene W. Simpson, W. G. Taaffe, G. Walker, S. R. Warren, E. B. Weeks. *Part II:* L. Findlay (with distinction), I. Norris.

D.T.M. AND H.—W. H. H. Andrews (recommended for Warrington Yorke Medal), F. H. Budden, E. M. Craggs, D. Gall, F. E. D. Griffiths, Margaret E. Holness, W. T. Joseph, S. G. Loh, A. McKelvie, J. M. S. Manson, P. R. Mohan, S. Newman, P. Pattison, J. N. Robertson, H. B. L. Russell, S. D. Sawyer, D. Scott, Alice Speight, Margot M. Stern, R. H. Strudwick (recommended for Milne Medal).

UNIVERSITY OF LEEDS

The following candidates have been approved at the examination indicated:

FINAL M.B., CH.B.—*Part I (Forensic Medicine and Public Health):* Vera A. Bell, K. A. Exley Marguerite J. Glover, Ruth C. Grey, Joan K. Hardy, J. A. Holgate (distinction in Forensic Medicine and in Public Health), Margaret E. Johnson, A. T. Merson, Anne B. Neil, J. Samuel, C. G. W. Sykes, J. K. Walker, Freda Walton, W. F. Weatherill, A. R. Webster, W. Wintersgill.

UNIVERSITY OF DURHAM

An inaugural lecture under the general title of "Industrial Health" will be delivered by Prof. R. C. Browne, first holder of the Nuffield Chair of Industrial Health in the University, on Friday, Jan. 24, at 5.30 p.m., in King's Hall, King's College, Newcastle-upon-Tyne. Tickets of admission may be obtained from the registrar of the College.

QUEEN'S UNIVERSITY, BELFAST

At a graduation ceremony held on Dec. 19, 1946, the following medical degrees were conferred:

M.D.—D. A. D. Montgomery (with gold medal), G. F. Adams (with high commendation), *W. J. Allen, *E. Fletcher, *A. P. Grant, *J. Jefferson, *D. F. O'Neill, *W. St. C. Symmers, *N. J. W. Thompson, F. S. Bonugli, R. J. L. Ferris, C. M. B. Field, J. Gilmore, H. L. B. Girvan, R. H. Kennedy, J. S. Logan, J. F. Pantridge, J. R. Roulston, G. A. Scott, N. J. Y. Simpson, R. J. L. Wilson, T. Wright.

M.CH.—J. A. W. Bingham.

M.B., B.CH., B.A.O.—†R. H. Livingston, †Mary G. McGeown, †A. B. Morrison, †J. B. Pyper, N. J. Ainley, W. T. Baillie, Sheena Best, J. McM. Bill, Mary T. Boylan, T. A. Brown, S. E. Browne, Grizel D'R. Carr, Nina A. J. Carson, J. C. Charlton, K. P. Clearkin, G. G. Dallas, D. W. Davin, J. C. Donaldson, R. D. Donnelly, J. W. Dundee, Monique L. Dunlop, Sheila M. B. Field, A. A. Fullerton, B. Gallagher, D. T. Glass, W. Goldberg, N. J. T. Hamilton, W. D. McG. Johnston, Hilda M. Jones, Eileen P. Kane, D. A. Kirk, G. T. N. Lawson, P. G. J. Linden, J. M. Love, W. J. Lyness, Elizabeth C. McClure, J. A. McCredie, D. McDaniel, P. P. McGarry, Martha E. C. McIntosh, N. W. McLeod, E. J. Miller, W. M. Patterson, D. T. Patton, J. Piggot, Anna I. Pillow, R. K. Roddie, O. Rosensweig, D. H. Roxburgh, B. Russell, Margaret W. Russell, Noreen M. Simpson, R. Simpson, B. Steinberg, J. K. Stewart, T. A. Thompson, Dorothea M. G. Thomson, Barbara Watson, R. F. Whelan, Margaret I. Wilkinson, Sarah D. Wilson, W. Wilson.

* With commendations. † With second-class honours.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

A lecture entitled "Surgery of the Thymus Gland" will be delivered by Mr. Geoffrey L. Keynes, F.R.C.S., in the Hall of the Royal Faculty of Physicians and Surgeons, 242, St. Vincent Street, Glasgow, on Wednesday, Jan. 15, at 4 p.m.

Medical News

A meeting of the whole medical profession in the Birmingham area will be held at the Nuffield Hall, Queen Elizabeth Hospital, Birmingham, on Sunday, Jan. 12, at 6.30 p.m., to discuss the resolution of the Council of the B.M.A. regarding the N.H.I. capitation fee and the action to be taken by the Negotiating Committee, and to instruct representatives to the Special Representative Meeting on Jan. 28.

A joint meeting of the Food Group of the Society of Chemical Industry and the Liverpool Section of the Society will be held at the University of Liverpool on Tuesday, Jan. 14, at 6.30 p.m., when Mr. P. N. Williams will present a paper on "Synthetic Fats."

The annual general meeting of the Harveian Society of London will be held at 26, Portland Place, London, W., on Wednesday, Jan. 15, at 8.15 p.m., when the president, Brig. H. L. Glyn Hughes, will deliver his presidential address on "Normandy to the Baltic from a Medical Angle."

A meeting of the Royal Sanitary Institute will be held at 90, Buckingham Palace Road, S.W., on Wednesday, Jan. 15, at 2.30 p.m., when a discussion on "Health Centres" will be opened by Prof. R. H. Parry.

The following radiological meetings will be held in London next week: Thursday, Jan. 16, 8 p.m., British Institute of Radiology, 32, Welbeck Street, W., discussion on "Cardiac Radiology" to be opened by Dr. T. Holmes Sellors, Dr. D. Evan Bedford, and Dr. J. Duncan White; Friday, Jan. 17, at 2.30 p.m., Diagnosis Section of Faculty of Radiologists, at Royal College of Surgeons of England, Lincoln's Inn Fields, W.C., paper by Mr. J. J. Mason Brown on "Arterial Injuries, with Reference to Arteriography in the Diagnosis"; Friday, Jan. 17, at 8 p.m., Section of Radiology of Royal Society of Medicine, 1, Wimpole Street, W., papers by Dr. S. Nowell, "Tomography," and Dr. A. Elkeles, "Disseminated Ossified Nodules in the Lungs associated with Mitral Stenosis."

A meeting of the Eugenics Society will be held at the Royal Society's Rooms, Burlington House, Piccadilly, W., on Tuesday, Jan. 21, at 5.30 p.m., when Sir Alexander Carr-Saunders, Sir Cyril Burt, and Dr. J. H. Fraser Roberts will present a symposium on "The Relation of Intelligence to Fertility." All interested in the subject are invited to attend.

The King has appointed Dr. Edgar Cochrane to be an Official Member of the Legislative Council of the Colony of Aden.

Mr. J. J. Robertson, Labour M.P. for Berwick and Haddington, has been appointed to the General Medical Council in succession to Lord Hacking. He is one of the five members of the Council nominated by the Crown. Mr. Robertson, a 48-year-old Shetlander, has had a varied career—retail fruit merchant in Edinburgh, middleweight champion of the Navy in 1918, at the Ministry of Supply in the recent war, and M.P. since the general election.

The British Postgraduate Medical Federation is shortly to be recognized by Royal Charter as a school of London University, with Sir Francis Fraser as Director. The Maudsley Hospital Medical School will become an Institute within the Federation. For the academic year 1946–7 the University has granted the Federation £147,000.

The Royal Medical Foundation of Epsom College invites applications for a Challice annuity, present value £32 per annum, which is to be awarded to a medical practitioner who, on account of age, has been compelled to retire from professional work. There is no limitation as to age. Forms of application can be obtained from the secretary's office, Epsom College, Surrey.

The Hospital for Tropical Diseases, which was closed during the war, has now been reopened at 23, Devonshire Street, London, W.1 (Tel.: Welbeck 8371), and is open to all patients suffering from tropical diseases. There is an out-patient department, for which appointments should be made by telephone or by letter.

A team of medical and public health workers from Ceylon are visiting this country for six months under a scheme arranged between the National Association for the Prevention of Tuberculosis and the Ceylon Government to study tuberculosis control, treatment, and rehabilitation, as well as sanatorium methods and mass skiagraphy.

The Ministry of Health announce the ending of the arrangement whereby relatives of Merchant Navy men dangerously ill in hospital could apply to the police for a railway warrant.

Dr. Annecke, Chief Malaria Officer for South Africa, recently announced further extensions of "Operation Arthur," the anti-malarial campaign that has been waged in Eastern Transvaal for the last three seasons. He said that, given the man-power, the whole of the Transvaal and the Union could be cleared of malaria.

Prof. O. N. Holsti, professor of medicine in the University of Helsinki and President of the Finnish College of Physicians, is on a visit, arranged by the British Council, to this country to study British medical developments, and, in particular, rheumatology, endocrinology, metabolism, and the teaching of medicine. Dr. Cruz Coke, a former Minister of Health in Chile, is also on a visit to Britain, arranged by the British Council, to renew contacts with British medical authorities.

The Royal London Ophthalmic Hospital, the Royal Westminster Ophthalmic Hospital, and the Central London Ophthalmic Hospital have united under an Act of Amalgamation, and are now called the Moorfields, Westminster, and Central Eye Hospital. The hospital will provide clinical material and facilities for postgraduate teaching and research: 341 beds are available.

The National Collection of Pathological Specimens of War Injuries of the Medical Research Council (Curator, Dr. Joan M. Ross) is now housed at the Examination Hall, 8, Queen Square, London, W.C.1. (Tel.: Terminus 3270.)

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* an increase was recorded in the incidence of measles 812, while there was a decline in cases of scarlet fever 191, diphtheria 87, and whooping-cough 78.

Large increases in the notifications of measles were reported from several counties; the largest rises were Warwickshire 195, Northumberland 161, Worcestershire 151, Durham 149, Devonshire 108, and Middlesex 103. The greatest contrasts to the general trend were decreases in Kent 99 and Essex 95.

Small decreases in the local incidence of scarlet fever were recorded throughout the country; the largest return was that of Yorkshire West Riding 38. No marked fluctuations in the local trends of whooping-cough were reported. The largest variations in the incidence of diphtheria were decreases in Lancashire 28 and Yorkshire West Riding 14, with a rise in Durham 14. The only large centre of infection of dysentery was Lancashire, Preston R.D., 11; only scattered cases were recorded in other areas.

In *Scotland* there were decreases in the notifications of measles 78, whooping-cough 42, and diphtheria 18, and rises in the incidence of acute primary pneumonia 30 and dysentery 15. The rise in cases of dysentery affected the eastern area, and Edinburgh reported an increase of 6 cases. In Glasgow the cases of acute primary pneumonia rose from 163 to 185.

In *Northern Ireland* another large increase, 130, was recorded in the measles epidemic in Belfast C.B.

Quarterly Returns for Eire

The birth rate during the September quarter was 22.9 per 1,000, which was the same as the rate for the third quarter of 1945. Infant mortality was 54 per 1,000 registered births; this was 4 below the rate of the September quarter of 1945, which was the lowest rate since 1942. Maternal mortality was 1.6 per 1,000 registered births compared with 2.6 for the corresponding quarter of the previous year. The general death rate was 11.5, and was 0.4 below the rate for the preceding third quarter. Deaths from pulmonary tuberculosis were 561; 184 were attributed to other forms of tuberculosis. These figures were 93 and 20, respectively, below the totals for the third quarter of 1945.

Deaths in the United States

During 1945 the total of 1,401,719 deaths in the United States was fewer than in either of the two preceding war years. The principal cause of death was heart disease, which accounted for 30.3% of the total; deaths from cancer accounted for 12.7%. The relaxation of rigid wartime driving restrictions coincided with a rise in deaths due to motor-vehicle accidents from 24,282 to 28,076. Deaths from infectious diseases declined and new low records were set up for deaths from pneumonia and influenza; these causes accounted for 68,386 deaths, 16.4% below the total for 1944 and 8.2% below the previous record low level of 1942. Tuberculosis caused 52,916 deaths, which were fewer than in any previous year. Deaths in the first ten months of 1946 were estimated to be 1,162,000—as compared with 1,144,373 in the same period of 1945.

Week Ending December 28

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 943, whooping-cough 1,149, diphtheria 210, measles 7,038, acute pneumonia 760, cerebrospinal fever 38, dysentery 55, paratyphoid 6, typhoid 3.

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INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Dec. 21.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1946 (a)	(b)	(c)	(d)	(e)	1945 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	29	4	21		—	43	4	13		2
Deaths		—	3				—	1		
Diphtheria	243	20	69		16	569	50	155		21
Deaths	3	1	1		—	12	1	4	2	1
Dysentery	62	7	31		—	230	20	43		—
Deaths					—					—
Encephalitis lethargica, acute	—	—	—		—	1	—	2		—
Deaths		1					—			
Erysipelas			46		4			30		3
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years										
Deaths	91	5	11		6	58	4	9	21	1
Measles*	7,769	239	240		349	623	52	92		3
Deaths	4	—	2		—	—	—	—	1	—
Ophthalmia neonatorum	74	4	15		—	46	2	10		2
Deaths										
Paratyphoid fever	6	—	2 (B)		—	4	—	—		—
Deaths	—	—	—		—	—	—	—	—	—
Pneumonia, influenzal	699	50	17		9	1,166	92	6		5
Deaths (from influenza)†	26	5	4		—	76	6	4	—	—
Pneumonia, primary		57	365		18		81	192	18	7
Deaths										
Polio-encephalitis, acute	2	—				1	—			
Deaths		—					—			
Poliomyelitis, acute	13	—	—		—	23	—	3		—
Deaths		1					—			
Puerperal fever		3	9		—		2	11		—
Deaths										
Puerperal pyrexia‡	133	22	6		—	136	19	10		2
Deaths		—					—			
Relapsing fever	—	—			—	1	—			—
Deaths										
Scarlet fever	1,201	73	130		42	1,718	139	251		49
Deaths	—	—	—		—	1	—	1	—	—
Smallpox	—	—	—		—	—	—	—		—
Deaths					—				—	—
Typhoid fever	4	—	2		—	5	1	1		1
Deaths	—	—	—		—	—	—	—	—	—
Typhus fever	—	—	—		—	—	—	—		—
Deaths					—				—	—
Whooping-cough*	1,586	103	231		38	1,100	92	50		6
Deaths	18	1	4		2	12	—	1	—	—
Deaths (0–1 year)	539	73	96		30	454	62	52	49	12
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	5,682	945	721		271	6,088	979	665	234	141
Annual death rate (per 1,000 persons living)			15·9					15·1	15·1	
Live births	9,158	1403	1137		259	6,890	956	841	332	239
Annual rate per 1,000 persons living			22·9					16·8	21·4	
Stillbirths	269	29	35			227	14	31		
Rate per 1,000 total births (including stillborn)			30					36		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

It is still not possible to publish the return of births and deaths for Eire for the weeks ended Oct. 26, Nov. 2, 9, 16, 23, 30, Dec. 7, 14, and 21.

No returns this week for Eire (notifications).

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Convalescent Serum in Measles

Q.—*A child 18 months old in a town full of measles—what precautions would you advise? Would you give particulars about the use of convalescent serum?*

A.—Convalescent measles serum may be used either to give complete protection or to render the attack a mild one in a child who has been intimately exposed to infection. Children of six months to two years of age are highly susceptible both to attack and to the risk of secondary complications, such as otitis media and bronchitis or bronchopneumonia. Therefore a child in this age group should if possible be completely protected. This is done by giving, within five or six days of exposure, 5 ml. of pooled convalescent measles serum recently harvested or, if not recently obtained, dried to preserve the antibody. (If the exposure is a family one the date on which the rash appears in a patient is regarded as the fourth day of exposure of a contact.) Protection lasts for a few weeks only and then the child becomes susceptible again.

A danger attached to the use of human serum is that the serum may contain the icterogenic agent of homologous serum jaundice, but in an extensive use of convalescent measles serum the writer has not encountered this condition in young children. Supplies of convalescent measles serum are very limited, and as an alternative a child may be given double the dose of a pooled adult serum, which may not, however, give complete protection. For an exposed healthy child over 2 years of age adult serum or a small dose of convalescent serum should be used in order to let the child have a mild infection with resulting immunity to future attack. Serum should not be given unless the child is known to be intimately exposed, and serum is of no value after the onset of clinical symptoms. Inquiry as to supplies of convalescent measles serum or adult pooled serum should be made at the local public health laboratory or from the public health department.

Penicillin Chewing-gum

Q.—*Is penicillin chewing-gum of any value? If so, how is it prepared?*

A.—According to Catherine F. McIntosh and P. W. Perryman (*Pharmaceutical Journal*, Dec. 7, 1946, p. 345) penicillin chewing-gum is best prepared by warming commercial chewing-gum to about 40° C. and rubbing it in a mortar with 200,000 units of dry calcium penicillin. After thorough admixture the mass is rolled and then cut into 20 pieces, each thus containing 10,000 units.

The penicillin content of saliva remained high for seven hours while such gum was chewed. Gum made with sodium penicillin was active for only four hours, and a tablet of the same amount of calcium penicillin only with no gum produced an effect for only two hours. It is recommended that each piece of calcium penicillin chewing-gum be chewed for four hours, three pieces daily. The method is said to give good results in Vincent's gingivitis, and it has been applied to the treatment of throat infections. This method of administration may well prove with further experience to be both more agreeable and more effective than the sucking of the penicillin tablets now available.

Horripilation and Perniosis

Q.—*What is the treatment of horripilation or "goose-flesh"? The patient is a young teacher, and the condition persists throughout the year. The upper arms and thighs are chiefly affected and the underlying skin has a dusky-red appearance.*

A.—The brief description suggests that this patient has perniosis, that is, a poor peripheral circulation, and an exaggeration of the follicles is a usual accompaniment. It is, however, not very satisfactory to make a diagnosis from such scanty information. If my suggestion is correct, then measures directed towards the poor circulation may be helpful: warm clothing, warm environment at home and work, physiotherapy by way of massage, exercises, and ultraviolet light, and possibly quite small doses of phenobarbitone and thyroid. Vitamin K seems to exercise a beneficial effect in some cases of perniosis. The follicular reaction may also be in part a local nutritional failure consequent upon the poor circulation. In such cases vitamins A and D by mouth are helpful, and a simple emollient ointment or glycerin lotion may be used on the skin.

Ephedrine and Desensitization

Q.—*If an allergic patient is undergoing non-specific desensitization and ephedrine is given to relieve the headaches which follow injections, does this interfere with the desensitization process?*

A.—The giving of ephedrine or adrenaline to relieve symptoms produced by either specific or non-specific desensitization is an accepted practice and does not interfere with the desensitization process.

Trichomonas Vaginalis and Salpingitis

Q.—*Despite the fact that the uterine secretions are normally alkaline, and so presumably limit the spread of a trichomonas infection upwards, does infestation of the uterus occur, and if so might it lead to a salpingitis and to pelvic peritonitis? I have a woman patient who had Trichomonas vaginalis in the vagina following laparotomy and salpingectomy after the sudden development of pelvic peritonitis. The thin pus leaking from the fimbriated end of the Fallopian tube failed to show anything on culture.*

A.—All the evidence so far available shows that the *Trichomonas vaginalis* does not ascend to the uterus or Fallopian tubes. This point was investigated by E. Allen and S. Butler (*Amer. J. Obstet. Gynaec.*, 1946, **51**, 387), who state: "We have been unable to demonstrate any ascension of the trichomonads above the external os of the cervix. We have examined material from the surgical specimens removed from 28 patients with active trichomoniasis. The material was obtained within a few minutes after operation. It was examined in saline suspension, cultured (technique described by Trussel and Plass) and stained (Leishman's stain described by Liston). The material was taken from the uterine canal, tubes, ovarian cysts, pelvic and ovarian abscesses, and amniotic fluid. No trichomonads could be demonstrated." These authors go on to give a warning against operating in the active stage of a trichomonas infestation since convalescence tends to be stormy. They also suggest that the bacteria found concomitantly with a trichomonas infestation may infect the uterus or tubes, especially in the premenstrual phase.

It seems therefore that in the case under consideration some bacterial infection must have been responsible for the salpingitis and pelvic peritonitis. Several points must be borne in mind. A flare-up of a pre-existing chronic or subacute salpingitis is especially likely to occur in the premenstrual phase. Gonorrhoea and trichomonas vaginitis may co-exist. Cultures taken at laparotomy for acute salpingitis are often sterile even when an organism such as the gonococcus can be demonstrated in the cervix and urethra. It seems that in this case some other cause for the salpingitis than trichomonas infestation should be looked for.

Risks of Cellulose Spraying

Q.—*What dangers are there in the cellulose spraying of motor cars if a proper mask is used?*

A.—The risk to health in this work is from the volatile components of the cellulose paint and not from the solids. These volatile substances vary widely, but from the health aspect probably the most important are benzol, methanol, and butanol. A mask, to be effective, must be designed to prevent the inhalation of vapours rather than dust, hence the usual type of mask with dust-filtering media is useless for this work. Except perhaps for occasional work of very short duration, adequate protection is, in fact, obtainable only when the spraying

operation is effectively under the influence of mechanical exhaust ventilation. In considering the health hazards the fire risks of cellulose spraying should not be forgotten.

Approach to Persecution Mania

Q.—*What is the best method of getting a lady with a persecution mania to a psychiatrist? What is the correct attitude to take: should one be sympathetic or otherwise?*

A.—It is not advisable to use subterfuge in getting the patient to see a psychiatrist. If nothing will induce her to consult a competent specialist, she must be permitted to go her own way. However, the wisest method of approach does not seem to have been used so far. The deluded patient, who is not conscious of feeling ill in any way, commonly resents the suggestion that he or she is "mentally affected," or that his or her false beliefs are the result of "imagination" (which, of course, they are not in any case). It is not possible to discuss their symptoms with deluded people unless one accepts some common ground, which includes the reality of their experiences. A sympathetic attitude is certainly best. The suggestion might be made that the feelings in question are not infrequently the result of an interference with the orderly functioning of the nervous system arising from some physical cause, for which specialist advice would be helpful. If this is rejected, reasonable excuses for calling in psychiatric aid may usually be found within the logic of the delusional beliefs—e.g., as a suitable preliminary to reporting the persecution to the police.

Alcohol Test for Milk

Q.—*What is the alcohol test for the keeping quality of milk? How is it performed?*

A.—The alcohol test is carried out by adding 1 ml. of 68% ethyl alcohol to 1 ml. of the milk, and inverting the tube once. If precipitation of casein (i.e., discrete particles however small) is observed in the thin layer of liquid adhering to the walls of the tube, the test is regarded as positive. The alcohol is prepared by diluting industrial methylated spirit with distilled water to approximately 68%, neutralizing any free acid, and confirming the final concentration by determining the specific gravity, which should be 0.895 at 15.5° C. Freshly drawn milk should be pre-incubated at 20° C. for eighteen hours before testing.

Ulcers of the Mouth

Q.—*A healthy woman patient has had for a year painful buccal ulcers, which take several days to reach their peak and several more days to heal, following the most trifling trauma. Have you any suggestions as to aetiology and treatment?*

A.—Painful ulcers of the mucous membrane of the mouth appearing in spasmodic attacks which die down and then recur are not infrequent, particularly in women. Bacteriologically they are often associated with a mixed streptococcal and pneumococcal flora, and this type often reacts well to local penicillin. Others show only mixed oral types of organisms, and these do not appear to react so well. The fact that very slight trauma appears to initiate the ulcers suggests that the mucous membrane is not in a particularly healthy state. It might, therefore, be advisable to give a course of vitamin therapy; massage of the mucous membrane with glycerin and tannic acid is also at times helpful. Ulcers of this kind are sometimes associated with infected tonsils, which appear to act as a focus of infection.

Treatment of Priapism

Q.—*I have seen four cases of priapism. Two were treated by incision, two by bromides and ice-bags. Recovery was slow. Is there any other treatment?*

A.—Priapism may be reflex in origin or due to some local cause, such as injury, inflammation, or new growth. Treatment will therefore vary with the aetiology. Persistent priapism due to thrombosis will generally require operation in the way of incision of the swollen corpora cavernosa. As an alternative to this, aspiration may be tried, using a needle of large calibre. It must be confessed that the treatment of this condition is on the whole unsatisfactory and that convalescence is inevitably slow.

Letters and Notes

Village Longevity

Dr. J. PIRIE (Harbury) writes: Looking over my death certificate book I find the ages of my last entries are: 89, 77, 75, 89, 82, 90, 74, 84, 74, 77, 87, 78, 40 (pulmonary tuberculosis), 32 (pulmonary tuberculosis), 87, 73 (carcinoma). My practice is a country one in a well-known hunting district with only a few industries—mainly cement works—and in many cases very primitive sanitation and a sad lacking in decent houses for the working classes.

Record of Service

Dr. CHARLES HERBERT HALL of Watford has been secretary of the West Herts and Watford Medical Society since Sept. 18, 1896. This remarkable record of fifty years' service to a medical society which will celebrate its centenary in 1948 is, at the least, unusual. It will be interesting to know if any reader can equal or improve on it. Not so unusual is the fact that Dr. Hall has a son who is in practice, and a grandson who has just ceased to be a Naval Medical Officer.

Apparatus for Trichlorethylene in Midwifery

Dr. C. F. SCURR (Barnet) writes: Referring to Dr. John W. Scholey's letter (Nov. 9, p. 722), I have used trichlorethylene in the Oxford vaporizer for the production of analgesia in midwifery with excellent results. The machine is used cold, the lever is set for a reading of from 4 to 7, and the mother herself holds the mask on her face. On occasion, by increasing the concentration of trichlorethylene administered, full anaesthesia has been produced for the insertion of sutures into the perineum.

Swiss Holidays for Children of Doctors Killed in the War

In connexion with the Swiss Red Cross "Save the Children" scheme a generous offer has been made by the Swiss medical profession to accommodate in Switzerland for three months the children of British doctors killed during the war. The names of children between the ages of 4 and 13 are being recorded at B.M.A. House, and any practitioner who has personal knowledge of a family entitled to take advantage of this offer is requested to communicate with the Secretary of the British Medical Association, giving all relevant details. The scheme already covers the children of French and Belgian doctors who were killed or totally incapacitated in the war.

Re-inoculation with T.A.B.

Lieut.-Col. H. G. G. ROBERTSON, R.A.M.C., writes: With reference to the question and answer (Nov. 23, p. 803) regarding T.A.B. inoculation, the standard Army practice may be of interest. Primary inoculation consists of one dose of 0.25 ml. followed by a second of 0.5 ml. 10–14 days later. This is regarded as being effective for 12 months. Re-inoculation consists of one dose of 0.25 ml. If more than three years has elapsed since the last inoculation the patient is considered to have lost his immunity, and primary inoculation is then necessary again. In the case of tetanus toxoid, the doses are two of 1.0 ml. each at intervals of 6 weeks, and the same rule applies regarding re-inoculation. In both cases immunization is normally carried out only when an individual is proceeding overseas.

Milk Priority

Dr. G. A. POWELL-TUCK (Birmingham) writes: May I suggest that all persons who receive the old-age pension be permitted to have half a pint (285 ml.) of milk per day. This would at least allow them a warm drink before retiring to bed.

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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